COAL AGE

McGRAW-HILL COMPANY, INC.
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That Blind Spot

EVERY eye has its *punctum cæcum*, its blind spot, the point which affords no vision, and similarly every man has one or more mental inhibitions. Probably if Napoleon with his administrative ability had tried to do the work of Faraday he would have failed. That errand boy and retort washer looked out through what, to Napoleon, was probably only a blind spot, and he discovered the art of generating electricity by motion. Many a man has today administrative ability, even engineering ability but only a relatively blind spot or at least a point of obscured vision for electricity.

Unfortunately, he tries to be a universal mining genius and endeavors to operate his mine without an electrical engineer, suffering all the time because he has not courage enough to admit that electrical engineering is not in his line. Many a mine is hampered because some man in its management is incapacitated by some mental shortcoming and will not get help and advice from someone who has a preference for what creates in him merely a distaste. Fortunately most companies have realized this, and as a result are getting good results by delegating their electrical or their mechanical details to someone who has a penchant for such problems. Some still there are which try to find men of a universality of genius, but these men are hampered even if they do find them, for any man who attempts to cover every field thoroughly and to control everything is too busy to do anything well or fails utterly in a comprehension of some one or more of his many diverse duties. Thus we get plants which reflect the mind of one man and not the combined genius of several.

Marvelous or Only Inevitable?

"WHY is the coal industry so disturbed by labor troubles?" asks the man on the street. Let us look at the postal service for an answer. Some time ago the cost of living rose rapidly, but the U. S. Government failed to recognize that fact with sufficient clearness and failed to raise the wages of postal employees, so the latter banded themselves together to obtain justice. They could have left the service—some of them did—but most of them stayed and sought by agitation to get increases in wage.

Whether because it was necessary to pay more to get employees or because of union pressure or because of a sense of justice—who shall determine?—the rate of pay was increased. Possibly all three causes combined to effect the result. However, whatever the cause, in 1920 wages were raised, and the change in rates cost $63,000,000 to the nation.

Today the postal clerks and carriers are getting $1,400 to $1,800 yearly, fully more than half of each class getting the larger stipend. They start in with the lower figure and rise in five years to the higher level and then, unless they become of a special grade and supervise other clerks, they continue to receive $1,800 a year. That is a wage larger than that paid to employees of like character in private industry, as an investigation has proved. It is far more than is paid in country districts.

One would think the postal clerk and mail carrier would be satisfied, but they are not. There is the union for one reason. It is necessary that any man you are employing shall do something for you. If he isn't busy serving your interests you are defrauded. He must earn his wage. So the union must try to do something, just as it does in coal mining. Furthermore if you got an increase of $63,000,000 by united effort in 1920, why not duplicate that or do better in 1924. Once the habit is formed it is not easily broken. We often have seen that state of affairs around the coal mines. "It has been done before, why not do it again?" is the well known expression.

Then again, the public is friendly. The people are writing letters to congressmen advocating an increase to postal clerks and carriers. In the coal industry we have seen a similar condition. The public is kind hearted. It likes to expend what it believes is another man's money. How bitterly it cries when it finds that it is its own.

So the clerks and the carriers are clamoring for a living wage just as the mine workers have clamored, and, just as there are too many men willing to "starve" as miners, so there are many men willing to "starve" as letter carriers and postal clerks. Over 6,000 men are certified as eligible for the service, having passed their examinations, but so far there is no room for them. Over 15,000 have written the Civil Service Commission asking when there will be another examination. So with little unemployment in the country, except around the coal mines, there are plenty of men anxious for these jobs.

The incentives are organized agitation, the hope of doing a second time what already has been done before and the good will of the public. This explains why the postal clerks and the carriers are fussing; it also furnishes a reason for the constant labor troubles of the mine workers. The U. S. Government says it can't pay the increases in wage that are demanded, for if they are paid the money must come out of increased postal rates or taxes. That answer seems insufficient.

If wages were inequitable or would not attract the men needed, there would seem to be ample reason for demanding that the money be found somewhere, even the $123,000,000 which the Kelly-Edge Bill would demand in its first year and the $150,000,000 more or less that in all would be required later. But the wages are not inequitable nor are men scarce, so the readjustment should not be made except perhaps in large cities where rates and other living costs are inordinately high.

The gods in the gallery are laughing however that the Government which has meddled so often in mine labor difficulties and has sobbed so loudly that the operators and miners could not solve their differences

promptly and amicably has now a trouble of its own and finds that with agitation becomes a business and with protest raised to a practice and with a populace willing to sympathize with wage earners, right or wrong, disputes are chronic. No sooner is one settled than another starts.

Alex Howat Is Not Dead

SOME things that have been going on down in Kansas indicate that the Alex Howat issue is by no means dead within the United Mine Workers. The forcible ejection of Howat, deposed former president of the Kansas union district, from the Indianapolis convention of the union did not strengthen President Lewis in the estimation of many Kansas miners. Instead, it excited them so that Howat was considerably in the ascendent at the recent Kansas district convention. What he demands is reinstatement in the union with full and immediate rights to hold union office and attend international union conventions.

It is plain that if the Kansas district had the power it would give him what he wants. But, unfortunately for Howat, the district has not that power. In its convention the district went on record in favor of abolishing the rule that after a union man has once been expelled he cannot, for three years after reinstatement, hold office. It appears obvious that if it were possible for the Kansans to reinstate Howat and nominate him for election to the presidency of the district, he would certainly be elected in spite of what President Lewis could do to prevent this disturber from getting back into control in the Southwest.

The district convention wanted to pay Howat for the five months which elapsed between his expulsion for calling an unauthorized strike and the end of his term. Lewis may bluff the Kansans out of this with his threat that he will prosecute them for misappropriation of union funds. But the fact remains that Howat is not dead in his own stamping ground and without doubt will continue to harass Lewis from outside the union.

Your Place in Cincinnati

AMONG the misfortunes of executives is the fact that in conversing with their subordinates they are prone to start the conversation and not always wisely. The subordinate puts in an idea here and there to round out the detail of the picture that the executive draws, but it is on the whole the executive's picture and not the subordinate's, and if the executive is disposed to follow the practice at some other man's mine there is little the subordinate can do to get a wholly new method of operation adopted.

The time is here for radical changes. You can no longer be content to follow old courses with trifling modifications here and there—modifications within the authority of subordinates. You must get a new vision or you face a deficit, and if you cannot see one you must get with other men who perhaps can; you must battle with first principles rather than box with trifles.

This is what makes the Cincinnati meeting different from the meetings that have preceded it. It is to deal with fundamentals. It is to widen concepts. Men without travel, without discussion, fall in a rut. Cincinnati will be outside that rut. Executives and engineers will meet to find a new way; they will meet more numerously than ever. The darker the night, the greater the need of light.

"Stay at home and save money" is foolish counsel. "Travel and learn a better, more economical way" is better advice. Go to Cincinnati prepared to find an answer to the troubles that perplex you. Have your subordinates meet you there. See that they absorb all that offers. Encourage them to give their views. Have them make their reports and listen to their counsel, prepared to follow or reject it as your judgment directs.

Your progress depends on using the best your assistants can devise, in giving your subordinates the information on which to direct their judgment. Time devoted to study and business contacts is not lost, it is invested. If you are at the Cincinnati show, you will be able to see that the time expended, by your staff, is well spent, and you can profit by the repercussions of other minds, of fellow operators, of superintendents, of engineers and of your subordinates.

"On to Cincinnati for lower costs per ton."

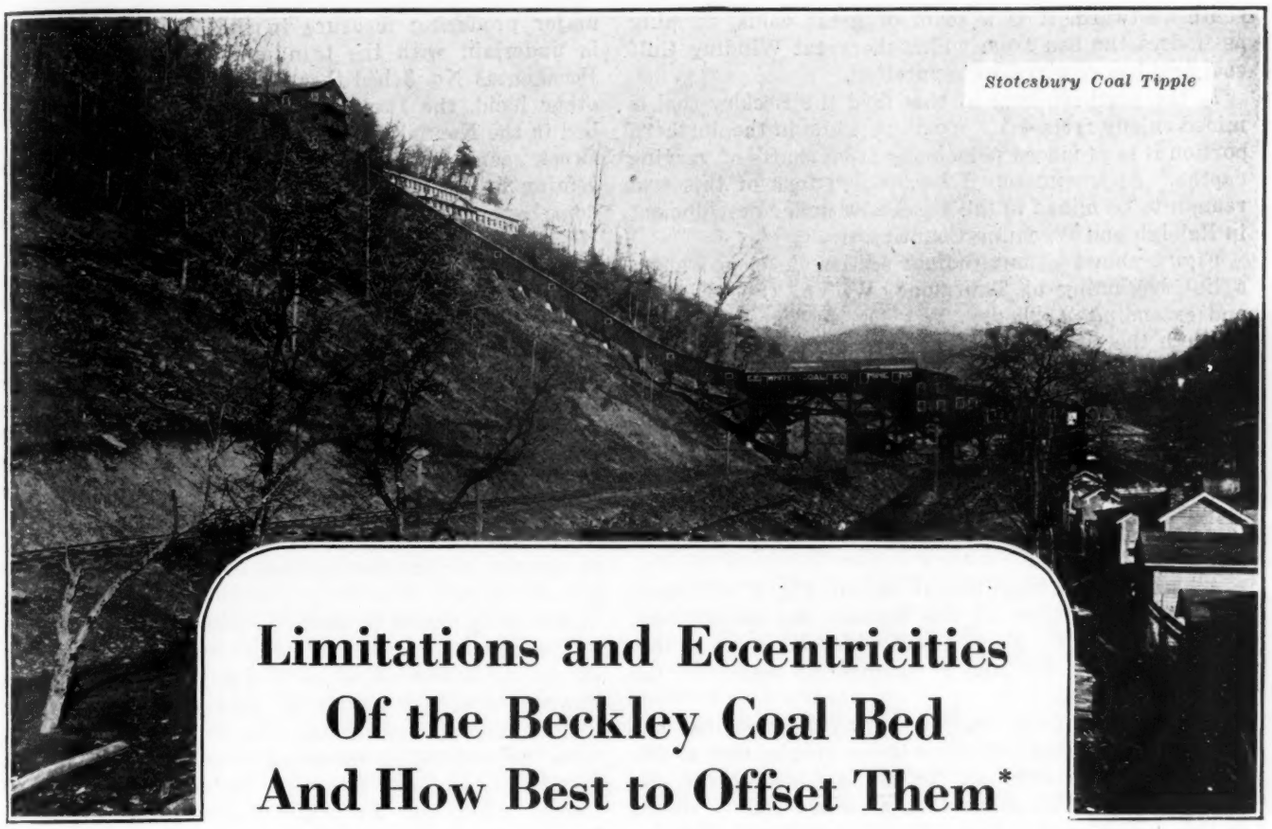
What About Western Kentucky?

MR. LEWIS and the international union have a job on their hands in western Kentucky, for that field is nearly lost to the union. In some of the other outlying fields, notably in the far West, it has been able to continue the expiring agreement for three years as was directed from Jacksonville, although it must not be overlooked that the scale in the state of Washington was at least $1.25 a day less than that in the Central Competitive Field. But in western Kentucky the situation is different. That field is much closer to regular $7.50-a-day union territory and therefore the course of unionism there is important.

As the situation now stands, western Kentucky is already divided between unionism and the open-shop. The western half of the region is covered in spots by a contract signed at Madisonville a year ago and which runs another year. Several important companies have not been operating under it but have paid approximately the contract scale which called for 90c. an hour to machine runners, $6.59 to $7.20 to other inside labor and $6.06 to outside labor.

In the eastern half of western Kentucky negotiations are now on for a new contract to replace the old one, the duration of which in consequence of the deadlock between miners and operators has been extended from April 1 to April 15. There the operators demand a 25-per-cent reduction and insist on it in cold terms. The weakness of the union's hold on even this part of the field is such that district-union leaders well know they cannot compel every operation to sign a continuation of the old contract. If Lewis is determined that his Jacksonville ultimatum to outlying districts must be obeyed by the union organization in western Kentucky, then unionism is dead in the whole field.

The question is, will Lewis manage to devise some sort of compromise when the district organization has failed to do this very thing in two weeks of negotiation? or will he cave in and officially sanction a wage reduction of 25 per cent to save the union's skin. Of course he has already been consulted in the western Kentucky matter, and since a stay of fifteen days has been agreed upon, it is logical to suppose that Mr. Lewis is putting off surrender as long as possible so as not to prejudice the case against the union in the Southwest where the operators demand relief and where in order to get it, they are ready to shut down the field and keep it shut down if it takes all summer.



Stotesbury Coal Tipple

Limitations and Eccentricities Of the Beckley Coal Bed And How Best to Offset Them*

Usually the Upper Split of the Bed Is Worked and This Is Extremely Uneven in Contour Making, Pumping, Haulage and Supervision Problems Severe and Standardization Difficult

By C. R. Stahl
Glen White, W. Va.

BECKLEY coal was named from the town of Beckley, in Raleigh County, West Virginia, the point where it is most extensively mined. Assuming the Fire Creek seam to be a separate measure, the Beckley bed is the lowest commercial bed, but one in the New River group which forms part of the Pottsville series.

The interval between the Beckley and Fire Creek seams often thins so that the two form one bed, according to the correlations of investigators of the West Virginia Geological Survey, whose conclusions are provisionally accepted and adopted by the authors belonging to that organization. Recent core-drill records, however, tend to upset this theory and convince its opponents that the Beckley seam is a peculiarly eccentric geologic formation composed of two parts, the lower split always lying in its true position with regard to other coal beds of the series adjacent, while the upper split varies from its regular position directly over the lower one, to intervals that baffle all methods of accurate determination in advance of mine development.

The commercial value of the Beckley bed in the past has lain in the top split. Still the lower split has its value. In some places where the parting is thin or has disappeared entirely, the two splits are worked together. A few mines also are working the bottom split where the top split is too thin to mine. Furthermore, there is reason to believe that the splendid coal deposit now being developed in the Laurel Basin in Wyoming County is the bottom split of the Beckley instead of the top split as has been heretofore supposed.

Beckley coal varies in thickness from 0 to 12 ft. and has been correctly described by the West Virginia Geological Survey as a multiple-bedded, soft, columnar coal. The principal overlying strata is a massive current-bedded sandstone varying in thickness from 50 to 100 ft., and named by Dr. I. C. White, State Geologist, the Lower Raleigh Sandstone.

Underneath this sandstone, and separating it from the Beckley coal bed is a dark-gray argillaceous shale varying in thickness from 0 to 17 ft. A typical analysis of the Beckley coal in its pure state is given in Table I:

Table 1—Analysis of Beckley Coal

Moisture	0.88
Volatile matter	17.37
Fixed carbon	78.25
Ash	3.50
Total	100.00
Sulphur	0.53
British thermal units	15,095
Phosphorus	Negligible
Fusing point of ash	2,600 deg. F.

The thickness of this coal, its purity and excellent heating qualities make it a highly desirable fuel, and long ago it established itself on the market as one of the finest steam coals in the world.

As yet no coal of merchantable value has been found in this bed along New River. It begins to assume commercial proportions in the deep canon of Piney River, in the vicinity of Stanaford Branch, and from there

*Paper read before the West Virginia Mining Institute.

south-westward, it is a seam of great value, forming as it does the bed from which the great Winding Gulf coal field has received its reputation.

In the southern zone of that field the Beckley coal is mined chiefly from drift openings, while in the northern portion it is produced principally from shafts of varying depths. Approximately 1,250,000,000 tons of this coal remain to be mined in the areas now under development in Raleigh and Wyoming Counties.

Fig. 2 shows a longitudinal section developed along a line beginning at Thurmond, W. Va. (See Fig. 1) and extending S. 28 deg. W. The section line passes through the city of Beckley, crosses the Winding Gulf at Hot Coal, touches Stone Coal at the mouth of Tommy Creek, and crosses the main line of the Virginian Ry. about 1½ miles northwest of Herndon. At this point the Norfolk & Western coal fields are reached. The line above referred to crosses Elkhorn Creek at the town of Northfork, touches Tug River at Pageton, and crosses this stream just east of the Black Wolf coal-mining plant.

A glance at the longitudinal section, Fig. 2, will show the relative positions of the Beckley, the Sewall, and the Pocahontas No. 3 and 4 beds which latter up to this time have been the major commercial seams of the Pocahontas group.

The relation of the Beckley coal to the principal valleys in the Winding Gulf-New River area as well as the relation of the Pocahontas No. 3 and 4 beds to the valleys in the Norfolk & Western zone are plainly shown on this section, and indicate the accessibility that determines the methods followed in attacking the deposits in the different fields.

Peculiarly enough, the Beckley bed, which is the major producing measure in the Winding Gulf field, is underlain with the thin and sometimes laminated Pocahontas No. 3 bed throughout that region. On the other hand, the Pocahontas No. 3 becomes the major bed in the Norfolk & Western field, the Beckley, or War Creek seam, which lies high up in the mountains, becoming in that area a thin and laminated bed. It seldom happens that both the Beckley and Pocahontas No. 3 beds are found in prime condition on the same lease.

Prospecting a lease for Beckley coal should be placed in the hands of parties experienced in that particular bed; otherwise a prospective lessee stands a chance of losing a good lease by reason of insufficient and improperly placed drill holes; or on the other hand, a lease may be taken up and a costly plant installed, only to meet conditions so faulty as to wreck the mining venture. Examples of both conditions can be found in the territory where the Beckley seam is worked.

The vagaries of the Beckley seam that confront the prospector become the problems of the operator. The producer's real troubles might thus be said to begin at the drift mouth or shaft bottom.

The general dip of the coal is nearly due northwest on an inclination of about 3 deg. It seldom happens, however, that a new mine can be projected with regard to this general dip. Usually the drills show a local dip with the inclination extending over a sufficient area to justify laying out the mine in accordance with it. Rarely indeed can the original mine projection be followed to its conclusion. Fortunately, the Beckley coal is so soft that it can be worked equally well in any direction regardless of the face and butt cleats. In consequence, the projection can be changed at will.

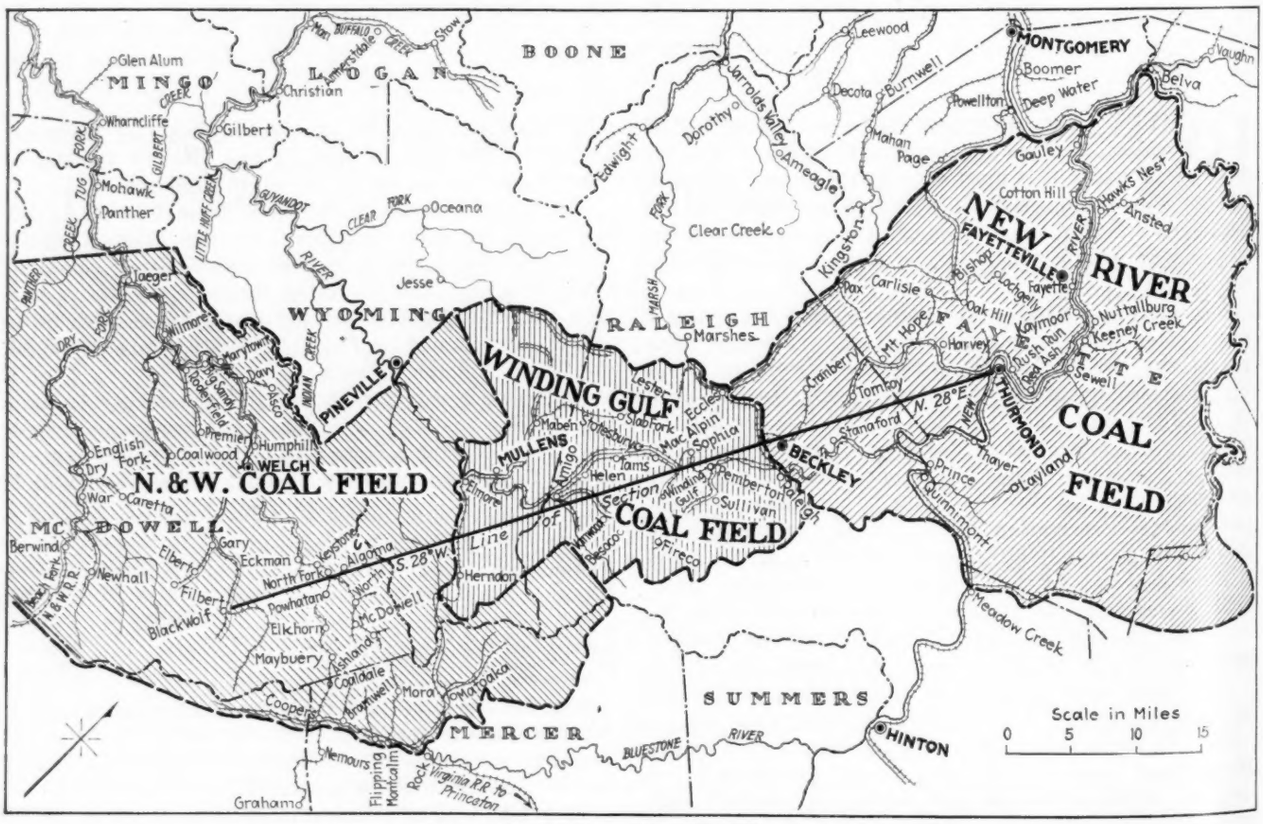


Fig. 1—Map of the Region Where Beckley Coal Is Found

The line extending from Thurmond to Black Wolf is the line upon which the cross-section shown in Fig. 2 is taken

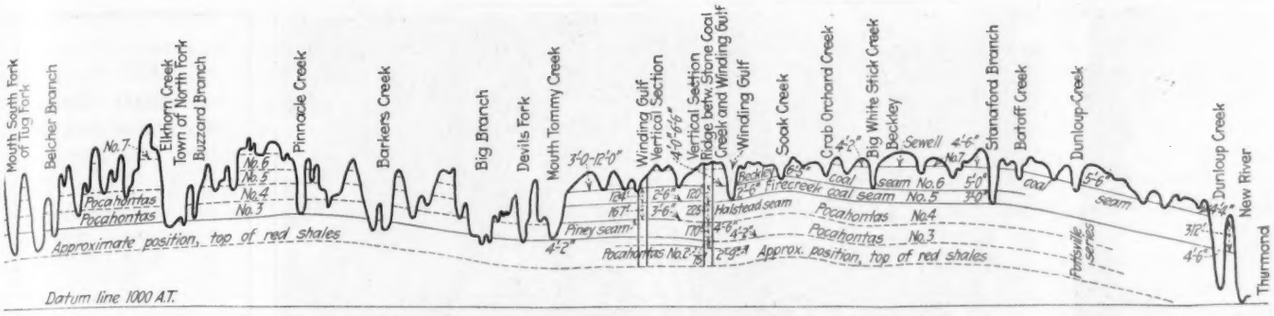


Fig. 2—Cross-Section of the Region Where Beckley Coal Is Found

This shows the Beckley bed not only in relation to the other coal deposits of this region but also to the surface. It is a strange coincidence that where the Beckley bed is most workable the Pocahontas measures are of poor quality and vice versa.

In opening a new mine in this coal bed, particularly if it be a shaft mine, it is well to make only a temporary main pumping installation and to provide only temporary pumping room. The permanent layout around the shaft bottom should be delayed until sufficient development proves what is the most favorable location.

In the past the operator mining the Beckley bed has usually not made sufficient allowance for the temperamental mood of Dame Nature. He has opened up his mine in a basin of clean coal, often ignorant of the fact that the local variations mentioned were present. He has started out with favorable grades and good top, these conditions continuing in some cases over an area of 200 or 300 acres. He has built himself a reputation and made money for his stockholders.

For this man there has been a day of sad awakening. He will have bought his equipment for mining thick coal, but will find some day that his entries have been driven into places in the seam that do not suit such equipment. He may then, if bold enough, change the character of his equipment to meet the new conditions; or, he may, as many have done, shoot bottom in his rooms, maintain his tonnage as long as he can, sell his mine, get a new job and leave someone else to work his way out of the difficulties.

This bed as it changes from thick to thin, varies also to some extent in character. In the top split of the Beckley bed, which is the split usually mined, there is a characteristic gray band consisting of low-ash coal located about 3½ ft. from the top. In thick coal this may be loaded out with the rest of the mine product and sent to market. When the coal gets thinner, however, this gray band thickens and becomes a hard bone, that must be separated from the coal, either in the working places or at the tipple. One thing may be said for the Beckley bed, in this connection, however; it is usually possible to send it to market without any other preparation than hand-picking.

As the entries go to the dip, the coal thickens; as they go to the rise, it thins. It is the rule rather than the exception to find the extremes of these two conditions within a thousand feet of each other with the grades varying from level to 12 or 15 per cent.

Another variable is the character of the top. Where the coal is thin, say from 3 to 4 ft. thick, the top is nearly always a hard sandstone. It sometimes is broken up and mixed with a little slate and coal; but it is probable that this portion of the measure will lend itself to longwall mining. With about 4½-ft. coal we have a top that may be either sandstone or shale. It may be good with no drawslate, or it may be consistently bad, with 3 ft. of that material ready to fall. The character of the bottom in this thickness, however, is such that pillaring is easy. And I would say also that this represents the Beckley bed in its best average condition.

Where the coal is thick the top may be slate, it may be shale, or it may be hard sandstone. However, the bottom is usually soft, making pillaring rather difficult. It is impossible to make a room-and-pillar system applicable to all of the changing conditions of the Beckley bed. Consequently, the width of the rooms and the thickness of the pillars should be altered to suit the conditions found.

It will be seen that the conditions outlined make main-line haulage difficult. I know of one mine that, in re-shooting its main entry after this passage had been driven in a mile, could do no better for a distance of 2,600 ft. than establish a grade of 3 per cent against the loads. The power cost of mining Beckley coal is

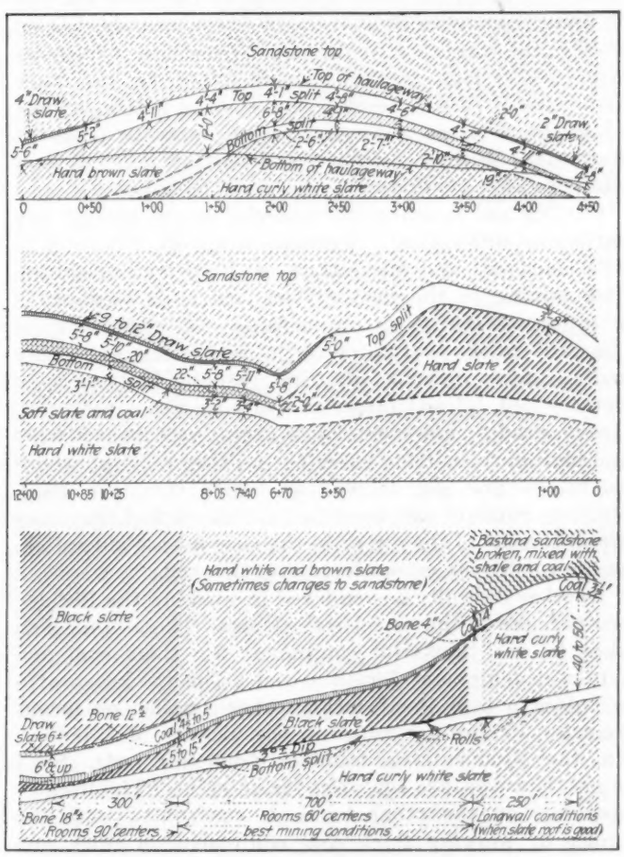


Fig. 3—Typical Cross-Sections of the Beckley Bed

Sometimes the top and bottom splits unite and form one coal bed. More often, however, the splits are distinct. The bottom split is far more regular in contour than the top split which is almost remarkable for its irregularity.

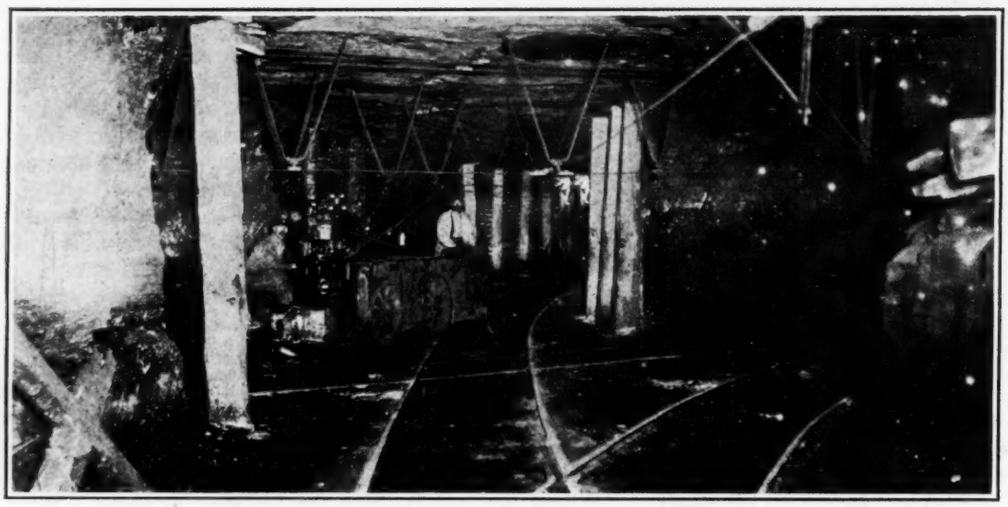


FIG. 4

A Shaft Mine

The Upper Split is the one usually worked but it is so uneven both in thickness and contour that much dead work must be done. Pumping is a difficult but not a serious problem, and it is frequently impossible to project advance workings and adhere to such a projection.

naturally high, and the wear and tear of the machinery used is heavy. It is probable that the repair bills of the Beckley operator are two or three times as high as those of operators working coal measures on uniform grades.

The operator can provide for future haulage and mining in only one way if he desires to maintain tonnage and show a cost that will have bad conditions distributed along with the good. This is to keep the entries three or four years ahead of any known requirement. By this means he is enabled, when he shoots slate for height and grade, to do so intelligently and to lay out his work in each section of the mine for two or three years with the advance knowledge gained from having the territory developed by entries driven as mentioned. This means, however, that he will have thousands of feet of development open at all times upon which he receives no return. Air currents must be maintained in these sections; and airways must be kept clear of falls; furthermore gas must be swept out.

Cutting and shooting, fortunately, do not present any particular difficulties. The coal is mined, where thin, with shortwall, and where thick, with arc-wall machines. Pick mining in the Beckley bed, like mule haulage, is a thing of the past. Sometimes the coal will be "burned" to the bottom or to the top, making shooting and scraping difficult. In this respect, however, the Beckley bed, by and large, presents no great obstacles. Heavy grades, however, cause excessively heavy wear and tear on the cutting machines, as they must go where conditions are bad as well as where they are good. Machine runners also must be skillful, so that they may direct the cut to the dip or to the rise or on a side pitch, as the conditions encountered may demand.

Another difficulty encountered in working the Beckley bed is found in the variable thickness. The mining man likes to use thick-coal equipment for thick coal and thin-coal equipment for thin coal. The thickness of a bed does not in itself mean either smaller or larger tonnage. There are mines in the vicinity of Windber, Pa., that produce large tonnages from thin beds. Such mines, however, are equipped for doing so. The Beckley operator, on the other hand, is confronted with the choice of working thick coal equipment in thick and thin beds alike, or of employing thin coal equipment in both thin and thick measures. He may, of course, use thick coal equipment in his thick coal and thin coal equipment in his thin coal, but these conditions are local and change so rapidly that he soon has some equipment in a section of the mine not suited to it.

Ninety-five per cent of the Beckley coal now produced is mined by the room-and-pillar system, and it is unlikely that more than 30 per cent can ever be mined successfully by any longwall method. When, therefore, the Beckley operator attempts to use a loading machine, he must adopt a device that will work in room-and-pillar mining and in variable thicknesses of coal, but which can be transported over heavy grades.

Workers Output Also Varies Greatly

Not only must the variability in the coal bed be considered but also the variation in what constitutes a day's work. The standardization of mining, which is much to be desired, can hardly be accomplished in the Beckley bed. Motormen, machine-runners and tracklayers can do more work under favorable conditions in thick coal than under unfavorable conditions in thin coal; but it is difficult to secure this extra accomplishment from the men. The motorman's idea of a day's work is all too likely to be established by the motorman who labors under unfavorable conditions in thin coal.

The motorman working in the thicker sections, as well as other day men, is prone to believe that if he gets as many cars per day as the other fellow, he has accomplished his day's stint. The man in the thin coal, however, is constantly trying to get a job in thick coal, whether he be motorman or tracklayer; and if he is held to work in the thinner place is likely justly to consider that he should gather fewer cars and lay less track than his brother in the thicker coal. In considering the work that he might legitimately be called upon to perform, he is more apt to do too little than too much. Likewise, the loader wants to work in the thick coal, and a high differential has to be paid him in order to induce him to stay in the thinner place. As indicated elsewhere, the thinner portions of this bed will likely be worked in the future more and more by means of mechanical devices.

All of this means that the supervision given to mining in the Beckley bed must necessarily be of a high order, and that it takes constant vigilance and hard work to secure reasonable efficiency from the men. This combined with the fact that conditions constantly change, necessitating alterations in plans and methods of mining, is apt to result in a high cost for day labor in producing this coal.

Countless swags encounteded in this coal measure entail big pumping bills, numerous pumps, many pump-runners, and high repair charges. The quantity of water found in any one swag is not excessive as a rule, but it is a continuous source of trouble unless expensive drainageways are driven to draw it off. The bottom split of the bed is nearly regular and usually too thin to be worked on its merits. The drainageways can usually be driven in it to tap the swags that are found in the top split. Many miles of such drainageways have been driven in the Winding Gulf field.

Swags usually occur where the coal is thick and the bottom soft. In many instances the bottom will begin to heave in these swags before any pillaring is done, the water appearing to have a softening effect on the slate. The wise operator, therefore, in pulling his pillars, will mine out the swags first. And here again he is confronted with the difficulty that every pillar job has to be planned separately from every other; no systematic method, to be followed throughout the life of the mine, and to which the men can be trained, is suited to the Beckley bed. Here again we have another necessity for the high order of supervision given to mining and the large number of bosses required, all of which adds to the expense of operation.

In conclusion let me say that the man who wishes to make a success of mining this splendid, if irregular deposit of coal, must have ample capital. He must be prepared to stand hard knocks, and spend considerable sums of money in overcoming at the outset any adverse conditions that may be encountered never letting them accumulate to overwhelm him later.

Six Per Cent of Methane Makes Mine Air Dangerously Explosive

At Low Limit Methane Propagates More Readily Up Than Down—Air Vitiated by Carbon Dioxide Explodes Only When Methane Content Is High

"ONLY in percentages between 6 and 14.6 is methane dangerous," said Dr. R. V. Wheeler, director of the Mines Department of the Government Experiment Station, Eskmeals, Cumberland, England, in addressing a body of mining men at Scranton, Pa., March 20. Dr. Wheeler said that though the explosive action of methane is entirely unaffected by the intensity of the source of ignition it does depend in an important degree on the position of that source.

An explosion of methane at its lower explosive limit will propagate more readily upward than downward. The flame rises more readily into the stratum above it and propagation is thus made easy. If a 5.3 per cent mixture of methane and air is ignited near the floor of the mine it will burn upward slowly in a long column and without spreading till the roof of the mine is reached. Then it will spread laterally slowly for some distance without any speed or violence. With 5.4 per cent of methane the flame will involve the whole area containing the gas providing that area has that same percentage of methane and is ignited from below.

If, however, the proportion of methane is 6 per cent the firedamp will ignite and burn in all directions even when lighted near the roof. Similar phenomena may be noted at the upper limit of ignition. A firedamp having 13.4 per cent of methane will flare upward if ignited at the bottom. If the percentage of methane is 13.5, the firedamp will propagate flame laterally but not upward. If 14.6 per cent of methane has accumulated, the flame will extend its ravages downward but not upward or laterally. Any larger percentage of methane than that forming the upper limit will not propagate at all in any direction. These figures may be expressed in a table:

Explosive Limits of Methane in Air

	Lower Limit Per Cent	Upper Limit Per Cent
Upward	5.3	13.4
Downward	6.0	14.6
Horizontally	5.4	13.5

The stratum above a 14.6-per cent body of firedamp is vitiated by the products of combustion and will not burn. The stratum below it is free from that vitiation and the flame will travel downward, not readily, but slowly. Dr. Wheeler declared that by the explosive limit is meant the point in percentage where a flame is self-sustaining. The combustibility of methane is an entirely different matter. The firedamp that is explosive is not merely capable of being burned but capable of burning without an exterior source of combustion once it has been ignited. He put the danger limits between 6 and 14.6 per cent,

George S. Rice and R. V. Wheeler

Mr. Rice says this picture was taken at Eskmeals, Cumberland, England, which shows that the sterile dunes of that region can show in places a little thrifty vegetation.

He fully agreed with the American point of view that trolley locomotives wisely might be permitted in mines where the air in the mine continuously could be kept well below the explosive limit. Henry Walker, the deputy chief inspector, who was accompanying him on his trip to America, might question, he said, that statement and in saying what he did he spoke for himself alone. The British regulations prohibited any but armored cables, but he believed that the British rules were too conservative, for the explosive limits were well known and never were any lower than the low limits stated.

Speeds of propagation vary from about 20 ft. per second to about 100 ft. At 9 and 9.5 per cent the speed of the explosion reaches a maximum. On either side of that maximum the propagation speed falls rapidly. At 7 per cent the speed is less than half that at 9.5 per cent.

Dr. Wheeler said that the explosive limits were narrowed where the air was vitiated by the presence of carbon dioxide. If only 14 per cent of oxygen instead of 20.9 as in pure air be present, the lower limit of upward propagation instead of 5.3 per cent becomes 6.2, and the lower limit of downward propagation becomes 6.4 instead of 6.0 per cent. The speeds given

referred to explosions at the open end of a heading. They were greater where the explosion started at the far, or closed, end. The speed of propagation was a little greater where the roadway was large.

Where the explosion starts at the far end of a heading it becomes more violent as it progresses toward the open end. Hydrogen has explosive limits far wider than methane. They lie between 10 and 80 per cent. Dr. Wheeler said that methane ignited sluggishly. Thus glowing coals would not ignite firedamp if their temperature was below 600 deg. C. (1,112 deg. F.). No matter how hot the source, methane would not ignite unless it had been exposed to the flame arc for ten seconds. That was why the flame of "permitted explosives" as they were termed in Great Britain would rarely ignite firedamp. Black powder gave a flame of longer duration and was dangerous in consequence.

Anthracite Dust Can Be Exploded

Dr. Wheeler questioned G. S. Rice's statement that anthracite dust would not explode. Given a sufficiently violent source of ignition it would propagate flame, but fortunately, he added, such a source was not likely to be provided so no one in anthracite mines need be apprehensive of that form of hazard.

Henry Walker, deputy chief inspector of Great Britain, said that a gaseous mine was defined in the law as one where the methane in the return was normally one-half per cent or over, or where a man had been injured in an explosion of methane. He said that to protect the lives of the men from falls of roof the mine-inspection department specified the distance between supports, between the rows of supports and between the rows and the face. He declared he could not approve the American anthracite practice of blasting out timbers but favored rather the use of prop pullers. A new device provided for the twisting of the prop as a pipe is twisted by a wrench. This seemed to give excellent results enabling the prop to be removed with ease.

Asked by E. T. Conner whether men should be withdrawn if the percentage of methane rose to 4½ per cent, Dr. Wheeler said in such a case he would exercise every precaution, feeling fearful that the point from which the methane came would have an explosive quantity of that gas, but until he found such an explosive source, if he were a mine owner, he would not remove the men. Mr. Walker in further answer to Mr. Conner added that it would be his painful duty under the hypothetical case to prosecute Dr. Wheeler for violating the law which required that the men be withdrawn after 2½ per cent of methane had been noted.

Prior to the meeting, which was held in the auditorium of the Scranton High School, E. T. Conner entertained the British delegation and a number of the principal engineers of the anthracite region at the Scranton Club. The meeting was held under the auspices of the Engineers' Society of Northeastern Pennsylvania with President Dimmick in the chair.

Crush Coal to Meet Market Needs

By H. M. Killman
Mining Engineer, Mount Olive & Stanton Coal Co.,
St. Louis, Mo.

The coal at our No. 2 mine is a high-grade bituminous steaming coal and the percentage of lump and fine coal cannot be adjusted to meet our contracts without some crushing device. For this reason we have installed an American coal crusher. The coal comes directly from the shaker screen to the crusher where the large lumps are broken by the impact of a series of rings. After the coal is crushed it is conveyed by a belt conveyor to the screens where it is sized and then delivered to the railroad cars.

Since the installation of the pulverizer, 140,000 tons of coal have been crushed. Although the equipment is capable of handling 350 tons of coal per hour, it has produced our requirements by operating about four full days' time for four months of the year when its operation becomes necessary.

In order to take advantage of the market conditions at all times our company has found it advantageous to be always in a position to ship either lump or crushed coal. At times, the market for fine coal is better than lump, and when such a condition arises we crush enough of our lump coal output to satisfy the demands of our market.

Previous to 1918, the annual cost of crushing at our No. 2 mine at Williamson, Ill., was $0.0643 per ton, but in that year when we installed the present equipment we reduced the cost to $0.0195 per ton—less than one-third of the former cost. With this new apparatus we effected a saving of $0.0448 per ton, or an annual saving of $1,253.22 on an average of 28,000 tons crushed per year. Repairs to the crusher have not cost a single cent to date and the estimated life of the device is forty years.

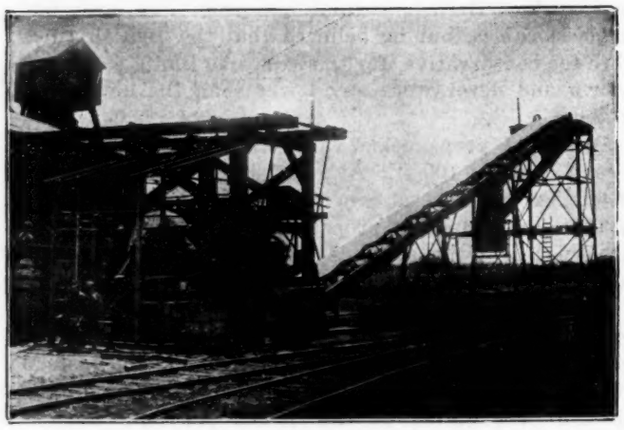


Fig. 1—Efficient Coal Crushing Plant

When coal may be quickly crushed at the cost of only 2c. per ton, contracts for sized coal can be readily fulfilled.

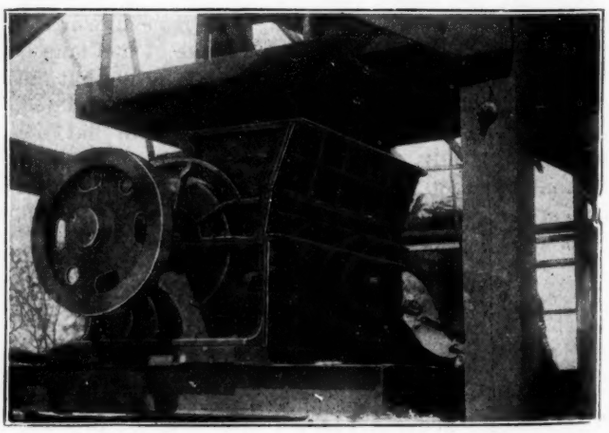
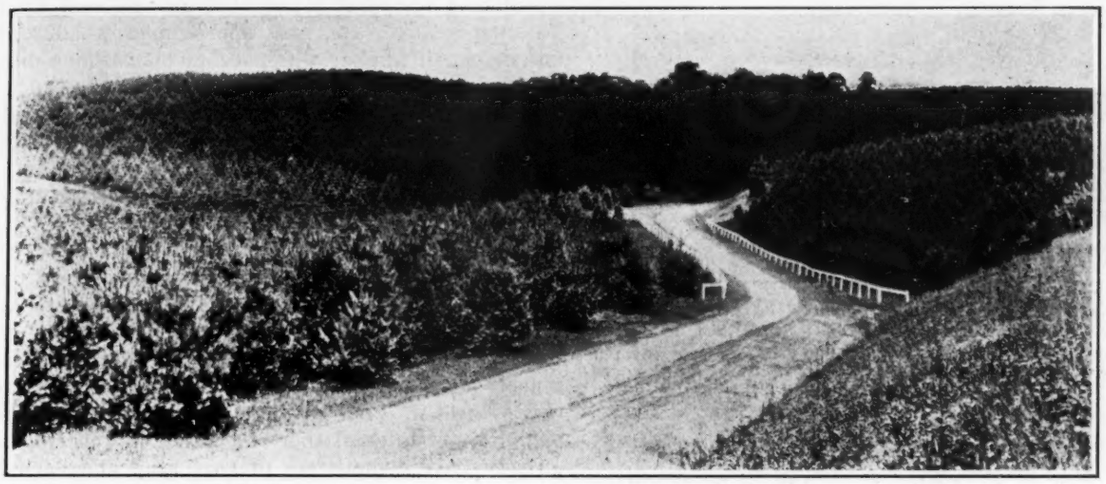


Fig. 2—Crusher With Capacity of 350 Tons of Coal per Hour

The coal comes directly from the shaker screen to the crusher, the large lumps being broken by the impact of a series of rings.



A Plantation of the Kingston Coal Co.

Wood Preservation and Reforestation Advances Reviewed by American Mine Institute

Expenses of Replacement Make Use of Untreated Timber Inadvisable—Two Mines Take Advantage of Their Own Fungus-Killing Water—Almost Four Board Feet Used for Every Ton Mined

A SUBJECT which is daily becoming of more and more interest to mine owners and operators throughout the entire country is that of provision of the timber necessary to mining operations. As is well known, the original forest areas of this country have been largely denuded and the mines are consequently having to go farther and farther afield for their timber supply. A round table discussion of this topic was held at the recent annual meeting of the American Institute of Mining & Metallurgical Engineers and several interesting phases of this important problem were brought out.

There is no panacea or even palliative that is immediately available for the difficulties which the coal mines of the country are now facing in the way of timber supply. As was brought out in this discussion, however, there are three well defined methods whereby the present situation may be at least partially relieved. These are:

(1) The use of less timber in mining.

(2) The preservation through chemical treatment of the timber used, and,

(3) The employment of various substitutes for timber.

Use 3,516,000 M. Board Feet Yearly

No single one of these alternatives will solve the present problem, but the use of all three may go far toward alleviating it.

The use of mine timber throughout the United States has increased from 201,000,000 cu.ft. in 1905 to 293,000,000 cu.ft. in 1919. Of this latter quantity about 250,000,000 cu.ft. were used in the round form or as logs.

It was brought out that in the United States the life of untreated mine timber varies from a few months to as much as ten years, but that the average is only from three to five years. Furthermore, the cost of renewing a timber, whether in shaft or in gangway sets, is several times the cost of its preservative treatment. If by means of treating with preservative, the life of a timber is appreciably prolonged, the investment in such treatment is well justified.

As to the cost of treating mine timbers, this is something which varies with conditions. It was stated, however, that treatment by means of Aczol costs about 10c. per cubic foot, whereas treatment by means of other preservatives ranges from 10 to 90c. per cubic foot. The second largest item of expense in timber for the mines is that for track ties. On main haulage roads, these at least, are put in place and left undisturbed until they must be taken out because of decay.

Many preservatives are available to the American mine owner. Some of these are well known, while others are but little used. The best known preservatives are coal-tar products, such as creosote, and various chemical salts such as copper sulphate and zinc chloride. There are also various mixtures of these salts marketed under several trade names, the best known of which is the Aczol previously mentioned.

Several different methods of treatment also are available, but, in general, only three treatments are in use. The first of these is the pressure treatment wherein the wood is placed in a closed cylinder. The air is first exhausted and then the timber is flooded with preservative and pressure applied over a period of several hours. This forces the preservative into the inner pores of the wood. The second type of treatment is

Land Denuded of Timber with Tents Erected for the Accommodation of Tree Planters

Acres and acres of such land can be found. If we wait ten years to plant them, when the decade is past and lumber soars higher than ever, we shall wonder why we left the planting so long.

known as dipping, or soaking, and consists in immersing the timber to be treated in a tank of preservative for a certain period of time. The third type of treatment is known as "brush treatment" and consists in painting the outside of the timber with preservative by means of a hand brush or air spray. There is little question but that the pressure treatment of timber previously framed and made ready to be put in place gives the most lasting results.

Most European mines are using some form of wood preservative treatment for a large portion of their timber. As a rule, these mines prefer pressure methods. At least two American metal mines are soaking their timbers in the mine water to preserve them, the preservative effect of this soaking being probably due to copper salts held in solution by the mine waters of these mines. A treated timber is not subject to the attack of fungus as is one that is untreated. Furthermore, it is far more resistant to dry rot. Some European mines, as stated by Mr. Rice, are using a hot salt brine as a preservative.

Wood Is More Enduring than Concrete

Howard N. Eavenson said that in some shafts the concrete linings do not last as long as those made of timber. In western Pennsylvania, several concrete-lined shafts, which were supposed to be permanent installations made at a considerable expense, had failed in less than ten years. Most of these shafts are on in the intake air, but the exact cause of the failure of the concrete is not definitely known.

Underground, both concrete and metal timbers are used as substitutes for wood. In European mines, brick and stone masonry are employed to a certain extent as substitutes, although these fail under heavy pressures, particularly if the pressure does not come upon the supports uniformly.

In speaking on this phase of the problem, Mr. Rice stated that in Europe where heavy pressures must be resisted, I-beams bent in the shape of an inverted U were being extensively employed. These would deform to a certain extent under excessive pressure, but would not fail.

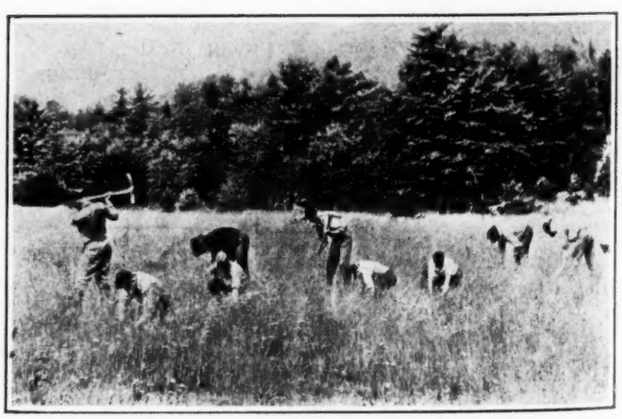
It was suggested that the United States Forest Service might well work out the comparative effectiveness of the dipping and pressure treatment. It was also stated that seasoned timber lasts much longer than green timber when used in the mines. Furthermore, that 24½ per cent of the timber used in coal operations might well be treated with preservative. The paper contributed by Newell G. Alford which will appear later in *Coal Age*, stated that the net use of timber was 3.71 board feet for each ton of bituminous coal produced. This paper also stated that approximately 2,022,000,000 board feet of lumber was used in bituminous mines in 1923 and that the possibilities are that by 1940, this will increase to approximately 3,005,000,000 board feet.

As is well known painting does much to lengthen the life of timber used in surface construction. This is so thoroughly appreciated nowadays by mining men that no further mention need be made of it.

A national and state forestry policy is greatly needed in this country. The various states must be induced to pass statutes which do not conflict with national laws and which foster forestation. It was suggested that the American Institute of Mining & Metallurgical Engineers might well appoint a permanent committee on this subject in order to correlate information regarding it and foster interest therein. Some engineering bodies already have committees of this kind and each has a different viewpoint. Probably the State of Pennsylvania has gone further towards fostering the reforestation of mining areas than has any of the others. This state now furnishes trees for planting without cost. These consist mostly of pine, larch and ash. It takes about fifteen years to produce a three sufficiently large to make a mine prop.

Some mining companies, particularly those operating throughout the anthracite region, have already given much care and thought to the subject of reforesting their areas. In the bituminous region, however, little reforestation has been done. It was pointed out that one of the greatest difficulties to reforestation, whether by mining companies or any one else, was the prohibitive taxes levied by the state. In Europe, it is customary to tax reforestation areas merely a nominal sum during the growth of the trees, but to levy reasonable income taxes when the trees are cut. It is probable also that long-term loans by the banks at reasonable rates of interest would do much to foster timber growing.

The round-table discussion, of which this is a brief reproduction, adjourned with the recommendation that the Institute establish a reforestation section, or that a committee on this subject be appointed. It is probable that some such step will be seriously considered in the immediate future.



Tree Planters on Kingston Coal Co. Lands

A little labor places a tree; no costs but those for fire protection and taxes follow. As for fire protection, the public should be willing to pay the bill, for it is the public and not the timber owner that fires the forest, putting timber guarding on equal ground with other property protection. As for taxes, these should be levied only when the crop is taken off and a profit received.

Calls Coal Commission's Deductions on Anthracite At Variance with Facts Compiled in Report*

Conclusions Characterized as Hasty, Biased and Contradictory—Failure to Speak Firmly and Definitely When Wage Negotiations Were in Progress Caused Loss of Confidence—Comment on Herrin Massacre

By Edward W. Parker
Director, Anthracite Bureau of Information, Philadelphia, Pa.

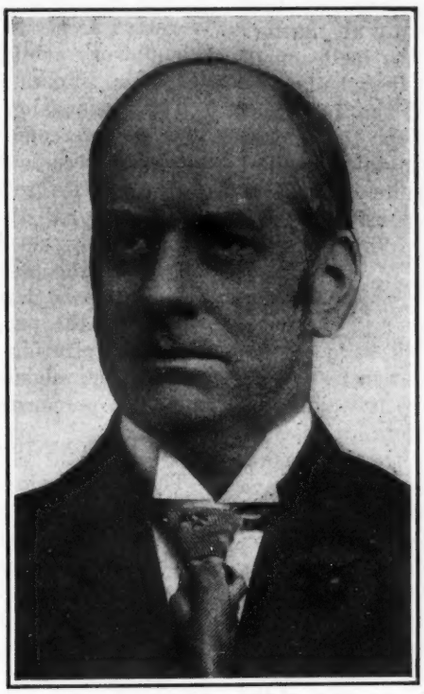
THE wage agreement of September, 1922, between the anthracite operators and the United Mine Workers of America, which followed the 5½ months' strike during the summer of that year, contained the following provision:

> The parties unite in a recommendation to Congress that legislation be forthwith enacted creating a separate anthracite coal commission with authority to investigate and report promptly on every phase of the industry, and the parties hereby ask the President to request the enactment by Congress of the recommended legislation.
>
> The continuance of production after Aug. 1, 1923, shall be upon such terms as the parties may agree upon in the light of the report of the commission.

The request for a separate commission to study and report upon the conditions in the anthracite industry was not granted, but that fact did not relieve the U. S. Coal Commission, which was appointed to investigate and report upon both the anthracite and the bituminous-coal industries, from the responsibility of handing down a report on conditions in the anthracite industry, in the light of which an agreement in 1923 might be negotiated. The commission was instructed to make a separate report on anthracite, and it did—not only one but several of them—but if they contain any suggestions of a concrete and workable character that will lend aid to the negotiating of wage agreements, careful study of thousands of mimeographed pages issued by the commission has failed to find them.

The commission, most unfortunately, surrounded itself with a somewhat motley assembly of communists, sociologists and social and industrial uplifters, through whose doubtless entirely well-meaning efforts the main object for which the commission was appointed—the spreading of a light upon a path toward peaceful wage negotiations—was lost sight of.

The commission expended approximately $600,000 appropriated for it by Congress. It has been estimated that the work of furnishing the mass of detailed information called for by the "expert advisers" to the commission cost the anthracite operators in the neighborhood of $1,500,000, and the bituminous-coal operators not much less than $5,000,000. And with what result? The mimeographed reports of the commission, which I have heard will occupy 8,000 pages of printed matter if Congress ever concludes to publish them, contain many valuable facts regarding the coal industry—many of them were already known, it is true, but we'll let that pass—but because of the hurried manner in which the work was done and the unfamiliarity of the commission's experts, as well as some bias on their part, the information as collected was not properly or, in many cases, intelligently digested; contradictions of a serious character are found in different reports and even in the same report, and many of the conclusions drawn, which express the opinions either of the commission or of its hired experts, are not in accord with the facts that they themselves compiled.



E. W. Parker

It will be remembered that the representatives of the anthracite operators and the United Mine Workers met in Atlantic City in July, 1923, for the purpose of negotiating a new agreement to succeed the one that was to expire on Aug. 31, this new agreement to be arrived at "in the light of the commission's report." Under the law creating it, the commission was to hand down its report on anthracite on or before July 1, 1923. The coming of that report was eagerly looked for by the contending parties, for both sides anticipated, hopefully, that it would furnish a plan upon which they could come to an amicable understanding.

Two copies of the report were received by the operators by special messengers Saturday afternoon July 7, and a good part of that night, the next day, Sunday, and Sunday night were devoted to the study of that report in the hope that something constructively suggestive would be found. To say that they were grievously disappointed is to express it mildly. There was some consolation, however, in the fact that the other side derived no more comfort or benefit from it than did the operators, and after a brief discussion of some

*Part of address entitled "A Few Comments on the Work and Reports of the U. S. Coal Commission," delivered at the meeting of the American Institute of Mining and Metallurgical Engineers, coal and coke committee, held at New York City in February. Mr. Parker's paper will be concluded in a later issue.

of its paragraphs, the following day (Monday) the report was by common consent, figuratively speaking, consigned to the scrap heap. Instead of helping, it actually aggravated the situation.

When the first break came in the negotiations at Atlantic City and each side lay resting on its oars waiting for some move by the other, the commission injected itself into the controversy, called the negotiating committee together at the Hotel Pennsylvania, New York City, poured a little oil and persuaded the joint conference to resume its deliberations at Atlantic City. When it appeared that an agreement was not even then going to be reached, the commission boldly announced that if an agreement were not reached it "would fix the responsibility." How we all shuddered at that dire threat! Do not let it be forgotten that the anthracite operators offered to submit all matters in controversy to arbitration—even to the inclusion of the "check-off," which up to this time they had absolutely refused to concede. In spite of the fact that the operators had offered arbitration, which the leaders of the miners refused, and that public opinion desired and was entitled to guidance, and in spite of its bold declaration that it would fix the responsibility, the U. S. Coal Commission remained mute. Why?

Commission Should Have Taken Stand

There is a general feeling that whether it possessed authority or not, the commission should have spoken firmly and definitely at that time, and that in its failure to do so, particularly having stated that it would, the commission lost an opportunity to perform a distinct public service. The omission cost the commission much in loss of respect and confidence. It might have assumed a virtue (of authority) if it had it not.

In a later report on Labor Relations, the commission does apparently recognize that the primary cause of its appointment was the stoppage of the flow of coal from mine to consumer because of strikes. It says:

> The frequency with which labor troubles have stopped production af anthracite coal, the disregard of public interest shown on occasions in the attitude of one or the other of the parties to these controversies, and the apparent impotence of the public to protect itself has created a situation that the public considers intolerable. In the search for a remedy certain citizens are advocating even so drastic a measure as nationalization of the mines while others are insisting on compulsory arbitration and outlawry of strikes. The demand for some sort of remedial public action is practically universal.

This statement was well justified by the pronouncement of President Harding on Aug. 18, 1922, when he said that but for the unorganized miners "the country is at the mercy of the United Mine Workers." It is borne out by another statement of President Harding and the commission: "Industry and the home alike must be freed from the menace of constant interrruption of their coal supply." The danger is emphasized by the fact that the United Mine Workers in 1922 officially boasted: "We refused arbitration from the President of the United States notwithstanding that all the pressure of the government was back of the proposal," with the result, as further stated by the United Mine Workers, that "the greatest industrial dislocation in the history of the world" ensued.

Bearing in mind this critical situation, the General Policies Committee of Anthracite Operators submitted a statement to the Coal Commission on the strike of 1922, which closed as follows:

> The strike is a legitimate weapon to drive an economic bargain with a selfish employer, but there is no moral right, and should be no legal right, to organize strikes or lockouts in basic industries or transportation where disinterested agencies for adjustment and adjudication are available. A national combination, controlling coal production, whether it be of employers or employees, which disregards the public interests and wilfully seeks to produce a coal famine by refusing to arbitrate industrial disputes, deserves correction and regulation at the hands of government. A government which is unafraid can do no less than meet this issue. If society has a right to protect itself against abuses in the coal industry, here is occasion to act. If this major problem goes unremedied, there is no consistency in proposing remedies for minor problems.

In substance the commission found the real cause of this major difficulty was refusal of the miners to accept the operators' offers of arbitration. It attributed strikes and lockouts to "unwillingness to present controverted points to any sort of arbitration," and added, "compulsory arbitration is not only impossible but undesirable. Voluntary arbitration is desirable."

The commission did feel that something should be done to overcome "the disregard of public interest shown on occasions in the attitude of one or the other of the parties to the controversies and the apparent impotance of the public to protect itself," and it recommended that "90 days prior to the expiration of the agreement the parties should indicate which provisions they desire to have changed and should immediately confer on the proposed changes. If, within 60 days of the expiration of the agreement, they have not agreed, they should report to the President, who shall appoint a person to make public report of the facts."

Sought to Give President a Free Hand

The commission was itself in existence while the negotiations were being conducted in 1923 and the stoppage of coal by strike was threatened and it kept silent.

The Coal Commission also recommended the following emergency power be vested in the President of the United States in time of industrial disputes:

> The President of the United States should be authorized by act of Congress to declare that a national emergency exists whenever, through failure of operators and miners in the anthracite industry to agree upon the terms of employment, or for any other reason, there is a suspension of mining operations, seriously interrupting the normal supply of anthracite fuel in interstate commerce; and to take over the operation of the mines and the transportation and distribution and marketing of the product, with full power to determine the wages to be paid to mine workers, the prices at which the coal shall be sold, and, subject to court review, the compensation to be paid to land and mine owners. (July 9, 1923, pp. 4, 5.)

The objections to this recommendation and the possible injustice of it are obvious. If the operators are willing to be bound by arbitration directed by the President of the United States, and the unions refuse to be bound by that arbitration, it would seem unjust to take the mines away from the operators and then have the President arbitrate the wages. If governmental authority can fix the conditions under which the men are to work and the operators are willing to be bound by such authority, it is unjust and unnecessary to take over the operation of the mines.

The failure of the commission to exert effectually its influence in the settlement of the controversy last summer resulted eventually in passing the buck to the Governor of Pennsylvania, who effected a "settlement."

Another matter that is to be regretted in regard to the work of the U. S. Coal Commission is the fact that it steadfastly denied the requests of the operators and

the miners for open hearings in which parties to the controversy could be given an opportunity to learn what manner of information was furnished to it and upon which it based some of its conclusions. The proceedings were of the star-chamber character and no opportunity was afforded to deny statements made by witnesses or to cross-examine them. Both sides presented elaborate briefs, it is true, and they were made public, but not in such a way that the public itself, the party most concerned, was able to obtain an intelligent and comprehensive idea of the subject. The anthracite operators presented no less than eight of these briefs. They covered the following subjects:

The Anthracite Coal Strike of 1922.
The Anthracite Emergency of 1922-1923.
Outlaw Strikes in the Anthracite Fields.
Union Rules and Practices Limiting Output and Impairing Efficiency in the Anthracite Fields.
Need for Greater Democracy in the Union.
Competition in the Anthracite Industry.
Summary and Recommendations as to Industrial Relations in the Anthracite Fields.
The Union Ultimatum: The Check-Off or No Anthracite.

So far as the operators know, the United Mine Workers did not attempt to contradict any of the statements in the briefs of the anthracite operators. It certainly did not in all the numerous and lengthy documents filed by it. It is gratifying to be able to say, however, that on all major points of fact the findings of the commission sustained the statements contained in those papers.

I have said that some of the conclusions of the commission were not in accord with the facts as found and published by it. The commission states, for instance, that anthracite is a necessity and that in consequence its production is charged with a public interest.

Less Anthracite than Bituminous Used

The use of anthracite, even for domestic purposes, is the exception rather than the rule. There is more bituminous coal used for domestic purposes in the United States than there is anthracite. In England, where the great Welsh anthracite fields are not far removed from London, anthracite is not generally used for domestic purposes. Throughout the entire world it is only in the Northeastern United States where the use of anthracite predominates. It is not a necessity of life and never has been. It is really a luxury fuel.

Secretary Hoover's commission of experts appointed to investigate the subject of community storage says emphatically that anthracite is not a public necessity; that in no community examined was it an exclusive fuel, its use varying with its price, as compared with other fuels, from 2 per cent of the total fuel used in a city like Indianapolis, to 60 per cent in a city like Buffalo. Even in the heart of New England only 42 per cent of the fuel of Worcester was anthracite.

The proof of these assertions lies in the substantial encroachments now being made by other fuels upon the anthracite supply. In New York City alone within a few months more than 400,000 tons of anthracite were displaced by oil.

Anthracite does not enjoy any particular franchise from the state and has no exclusive privleges. The only reason for suggesting that it is impressed with public interest lies apparently in its limited supply, but in view of the fact that it is not an essential of life and is used only in a limited way in a limited territory, it cannot justly be said that its production is impressed with a public interest. One of the members of the Coal Commission, Dr. George Otis Smith, has since admitted that the commission's statement that anthracite is a necessity was an error.

The commission is, in the minds of some, equally loose in some of its other statements, among which may be included its remarks about monopoly and lack of competition in the anthracite industry.

The detailed facts as found by the commission show a total commercial production of about 72,000,000 tons (page 11, Report on Cost of Production); 140 operators produce about 98 per cent of the product (page 11, Report on Cost, etc.); 10 companies produce about 73 per cent; the larger independents produce about 16 per cent; small independents produce about 11 per cent

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Herrin, the Town Where Men Were Massacred for Mining Coal

The illustration shows the county court house and some other buildings. Of the population in Williamson County, of which Herrin is the county seat, 54,052 people at the last census, out of 61,092 were native-born and only 3.2 were illiterate.

(page 10, Report on Cost, etc.); culm-bank operators produce about 5 per cent (page 12, Report on Cost, etc.).

The largest company produces about 15 per cent and it takes four or more companies to make up a total output of 50 per cent. Therefore, the industry does not show any greater centralization of production or any greater domination by any one concern than often exists in many industries. Whatever may have been the history of the industry in the past, as shown by court decisions, there is today no combination or arrangement, direct or indirect, restraining competition either as to price, production, distribution or allotment of territory. The commission could not have had any evidence before it to that effect except where the industry is co-operating with public officials in the public interest. If its numerous statements as to monopoly are by their implications or intendment contrary to this statement, then they are without foundation.

Various statements of the commission, however, convince us that, in spite of such general language, it intended to find that there was monopoly only in the sense that the supply was limited, with the result that when shortages are produced by strikes, there is always a so-called "sellers' market." The commission states:

> There is and can be no such free competition because the supply is limited and controlled . . . The usual undersupply of anthracite and the frequently recurring extreme shortages together make unnecessary any overt act to control the market; even with a potential monopoly of production, it is not necessary that there should be a combination

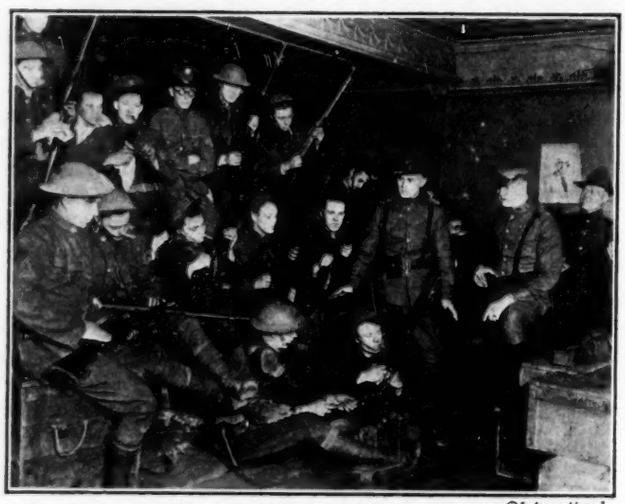
in restraint of trade in the legal sense to explain present price levels.

The commission expressly points out that "if there be a monopoly in effect it is not in the sense of pooling cost and profit among the railroad companies but in the sense that practically uniform prices have been charged by the railroad group." It states that its studies have brought "to light no evidence that economic combination takes the form of concerted partition of territory either among the larger companies or between the railroad and the independent companies. . . . If there is any well-founded suggestion of concerted action, it is shown in the small range of circular prices, the extremes in prices of company coal of domestic sizes being only 35c. although all this coal could be sold at the higher circular price and probably much nearer the price level of the independent coal. Doubtless both business sense and regard for public opinion have led these strong companies to acquiesce in the noticeable differential between their own prices and the higher prices of the independents."

From these statements of the commission it may be concluded that conditions are such that no overt act or combination in any legal sense is necessary "to explain present price levels," and if there is "any well-founded suggestion of concerted action," it is only due to the fact that company prices show small differentials, and these companies, out of recognition of public interests, charge less than they are able to get for their coal and thereby permit a differential to exist between their prices and the higher prices of the independents.

Price Differential Evidence of Competition

We submit that the differential in prices charged by the companies who produce at a large profit as compared with the companies who produce at a low profit, as well as the differential between these companies and the independents, is evidence of competition, and that even if the prices were more nearly the same level it would be no evidence of combination, since prices of standard commodities, just as in the case of wheat, cotton, copper and like grades of bituminous coal, naturally tend toward the same level regardless of the cost of production. In a competitive market, which is compulsory under our laws, these prices gravitate toward the price of the highest-cost company whose production is necessary to meet public requirements.



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Law Is Defended When Union Is Not Involved

Prompt action in the Ku-Klux trouble defended the majesty of the law, but when in 1922 the United Mine Workers of America opposed itself to law and order and nineteen men were murdered in cold blood the authorities hesitated, holding that there was no occasion to call out the National Guard for the defense of those who were willing to work, or to maintain order thereafter.

In addition to forbearance in the public interests on the part of the large-profit producers to keep down their prices, the commission also found that the operators had co-operated with the public authorities during the crisis of 1922 in an effort to effect equitable distribution of the short supply at reasonable prices. The commission says:

> . . . Realizing the hardships that a runaway market would inflict upon those least able to pay high prices, the Pennsylvania Fuel Commission, with the co-operation of all but a few operators, mostly irresponsible persons attracted to the business by the existing shortage, fixed a scale of "fair prices." According to the Pennsylvania Fuel Commission the coal mined by the "railroad companies" and certain independents—over 77 per cent of the total—was sold at $8.50 or less, these circular prices being adhered to at this time of acute shortage just as in a time of abundance. Unquestionably, these large producers might have obtained from the retailers of anthracite during the past winter much higher prices. This commission desires to pay public tribute to the restraint and good judgment displayed by the responsible shippers of anthracite during that trying period.

The record shows that there is no combination in the anthracite industry which can be called a monopoly or which in any way seeks, except when acting at the direction of a public agency, to regulate distribution, production, or prices, or in any way to restrain competition.

Strongly Financed Companies Benefit Public

The commission admits that "real benefits have flowed to the public from strongly financed companies, . . . that the anthracite mines have conserved the country's coal resources," by steadily increasing the percentage of recovery, and that they have economized in the capital employed and improved the economic condition of the mine workers, and while, as stated above, it pays tribute to the restraint and good judgment displayed by these companies during the trying period following the strike of 1922, it goes on to say that "the ability to stabilize prices that was used last winter by the larger companies *to benefit the public* contains also the inherent possibility of real danger." It has since developed that there was more than a possibility of real danger in that action of the anthracite operators, but it was not the kind of danger the commission had in mind. It developed when these same companies made their reports to the State of Pennsylvania on their receipts for the year that were subject to the much-discussed tonnage tax. These reports were rejected by the tax authorities of the state on the ground that the companies sold their product at less than the market warranted.

The commission finds that "in the anthracite region the union has won its fight for collective bargaining and now exercises a practical monopoly," and it suggested that the operators should unite into a stronger and more central organization in order to meet this situation. It found that because of the absence of such organization,

> Each operator must depend on his own unaided power and ability in dealing with the union. A disproportion in relative bargaining effectiveness results. This is in large degree responsible for the fact that the union has been able within the agreement period successfully to bring pressure on individual operators resulting in a practical and irritating modification of the terms of the agreement. In case of complaint by the operator over this pressure the weight of the operator's objection is that of a single company. So long as this disproportion in bargaining effectiveness exists,

the process of attrition of the agreement will be likely to continue. Moreover, another course of great strikes is likely to ensue corresponding to those between 1900 and 1912. This time, however, it will probably be the operators instead of the union who will be appealing to the public for fair play.

Of course, in view of the anti-trust laws and the recent activities of the Federal Trade Commission and the Department of Justice, there might be some question as to the ability of the anthracite operators to carry out this suggestion, but little things like that have not worried the commission. We need not deceive ourselves, nor attempt to disguise the fact that the United Mine Workers has a throttle hold on the anthracite industry and on the anthracite-consuming public. The so-called certificate law of Pennsylvania makes this hold, in the vernacular, "a lead pipe cinch," and the Governor of Pennsylvania says it is a good law.

The act of Congress creating the U. S. Coal Commission provided that the commission should investigate every phase of the coal-mining industry, both anthracite and bituminous, but the commission evidently decided that the most potent influence affecting the supply of both hard and soft coal was not a subject to be investigated—namely, the United Mine Workers of America. True, the commission held some star-chamber interviews with the leaders of that organization, and it permitted the submission of briefs, which, with those of the operators, it designated as swashbuckling literature; but while it "poked through knotholes and pried through cracks" to learn every detail of the operators' business from the profits on investments to the care of children in the mine workers' families, and the sanitary conditions of dwellings and communities, it never attempted to get any real facts as to the affairs and activities of the mine workers' Union.

Its comments on the Herrin massacre are perhaps the most remarkable statement contained in the many pages of its report. It cites what it states are certain facts which it says it believes will give a clear understanding of the real situation, but out of its high regard for the president of the United Mine Workers, or for fear of offending his sensitive nature, it carefully avoids quoting the telegram from him which, according to common belief, precipitated the murders. But it does say that when "the promoter of the Southern Illinois Coal Co. started to operate his mine in defiance of the union he was inviting mob violence and was flirting with death; he knew it and prepared to meet it. . . . *He challenged the supremacy of the union.*" In other words, these murdered men got what was coming to them because they defied the supremacy not of the laws of the land but of the United Mine Workers. The commission found that the tragedy might have been prevented, but it does not say how—and it concludes its discussion of this affair thus:

> Clothed with all the charitable *excuses* [excuses, mind you] above set forth, these furnish no justification for the brazen audacity with which subordinate officials and members of the United Mine Workers defended the crime and the criminals. That they were espousing the cause and defending the law breakers is further shown to the commission by the fact that they have since bought the mine where the tragedy occurred and have paid therefor $729,000.

I believe that this is the most remarkable statement that ever issued from an investigating body.

The Miner's Torch

"A Greased Mouth Cannot Say No"

APPROXIMATELY one-third of the front page of every daily paper these days is devoted to dispatches covering some phase of the Teapot Dome oil scandal investigation. If you happen to sit down beside a stranger reading a newspaper he is more than apt to open the conversation by remarking that politicians have always been classed as dishonest, but now we will have to coin a new word if we want to give them full justice, or something to that effect.

Far be it from me to pose as a defender of grafting politicians (I hope the ones who have been "oiled" will never be able to stand on their feet again), but it occurs to me that if we assume that politicians are the only ones who should benefit by the disclosures now being made at Washington we must be very ignorant of conditions in other lines of endeavor. Ministers tell us that their sermons do not bring hoped for results because so many of their hearers assume that the sermon is directed at a neighbor—Washington is releasing some pretty convincing sermons these days.

Getting personal, here are a few instances of graft recalled from my experience while employed in the coal industry.

A company operating a mine adjoining the one where I happened to be employed as mine superintendent obtained more than its allotment of empty cars from the railroad during a period of car shortage by furnishing the station agent and some of the train conductors shirts, hats and other articles of wearing apparel. I have heard of the same results being accomplished by substituting whiskey for wearing apparel (that happened back in the days before prohibition had become the law of the land) but I only know of this by hearsay.

A superintendent of my acquaintance obtained a considerable amount of stock in a fake insurance company for no other consideration than the use of his name to lead on suckers from his list of employees. The insurance company was thrown into bankruptcy several years later and all of the investors who retained their stock lost every penny invested. The superintendent had disposed of his stock before that happened.

A mine foreman working for me "sold" the desirable working places in his mine over a period of more than a year before I could satisfy myself as to the truth of reports that were brought to me by men who were entitled to the places thus disposed of.

A commissary manager at one of the camps where I was employed practically furnished his home with articles given to him by drummers who were able to profit by his recommendations.

I have been told that an engineer employed by me augmented his income by favoring miners with yardage measurements but I can only repeat this as hearsay.

Probably there is less graft in business today than there was twenty-five years ago, but there is graft a plenty even now; if we are to profit by the discomfort of the politicians who have recently been exposed in Washington it were well not to emphasize too strongly the word politician.

Where the Power in a Coal Mine Is Used or Wasted

Each Mine Has Its Own Power Problem—Thus One Small Mine Uses Half Its Power for Pumping Yet Only Five per Cent of the Whole Load Is Spent in That Way at the Average Illinois Mine

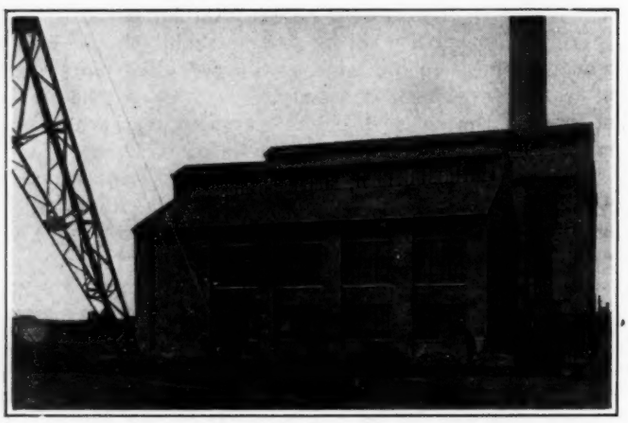
By A. J. Hoskin
University of Illinois, Urbana, Ill.

While contemplating the more serious difficulties that labor and the market present, a coal operator is likely to overlook the importance of his power problem and fail to note the proportionate parts of his power bill which the several operating activities at the mines compel him to expend. Though it is universally true that the labor cost in coal mining exceeds the sum of all other operating costs, and that supplies stand in the second place in mining expenditures, it is well to remember that the cost of power to run the machinery takes third place and it appears to be slowly increasing. With the probable substitution of mechanical loaders for hand shovelers there will be an increased demand for power. Whether this added expense will be fully compensated by the decreased cost of labor consequent on the use of more power remains to be shown.

A close analysis of practical conditions in several Illinois mines shows that their power requirements vary greatly. Despite arguments to the contrary the study fully corroborates the statement that the power demand for every coal mine is a problem unto itself. Actual figures from fifty representative Illinois shaft mines substantiate this claim.

To permit reasonable comparisons between power consumptions at different mines, it was necessary at first to classify such consumptions. I therefore chose to separate the total power consumption into six classes; namely hoisting, ventilation, pumping, mining, haulage and miscellaneous. The last item included illumination, heating of buildings and wash-house water, driving shop machinery, surface pumping, and all tipple equipment, but it did not include coal-washing which is, as yet, practiced at few mines.

Every practical coal-mining operator or engineer will promptly express doubt as to the possibility of accurately apportioning the total power consumption of every mine to these six headings. The argument is well taken. I admit that in certain cases the facts were not readily ascertained. Nevertheless I believe my findings were sufficiently accurate to afford dependable comparisons.



Power Plant at No. 4 Mine, Superior Coal Co.
The extreme left hand end of the building houses the main hoisting engine: The remainder of the building encloses the boiler and generator rooms.

Among the fifty representative mines selected, the average daily tonnages ranged from a minimum of 650 to a maximum of 5,200. Ten of the mines produced less than 2,000 tons each; the next nine mines produced less than 2,500 tons each; the following nine had average daily outputs below 3,000 tons; then there were ten mines shipping nearly 4,000 tons; the last twelve had daily outputs between 4,000 and 5,200 tons. The average production of the fifty mines was 2,828 tons.

All the mines included in the survey are entered by shafts. Their hoisting depth ranges from 101 ft. to 650 ft., and the average depth is 325 ft. The seams of coal vary in thickness from 3 ft. 6 in. to 10 ft., the average being a little more than 7 ft. Most of the mines are operated by mixed power, that is, they use both steam and electric power. However, two of the mines utilize steam power exclusively for hoisting, ventilating and pumping, the mining being manual and the haulage by mules. On the other hand, five of the mines are wholly electrified.

Without explaining the methods of determining the distribution of the total power consumption at each mine, I cite a few interesting figures. The reader must bear in mind that each item is a percentage of the whole power consumption at the particular mine. Curiously the most consistent item was miscellaneous which at the majority of the mines ranged close to 10 per cent of the total consumption. In fact, the average for the fifty mines was 10.5 per cent. In the other classifications there was much variation.

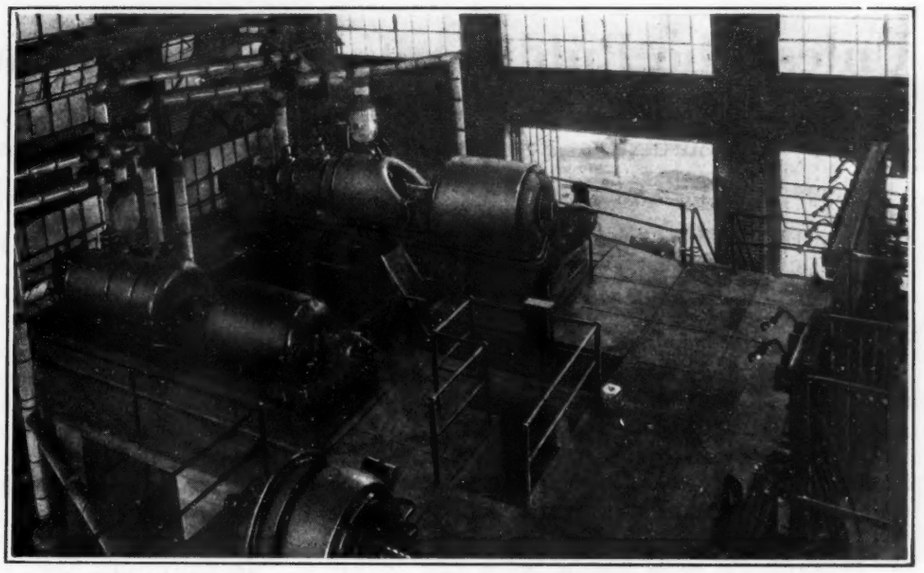
Hoists Use 1.4 to 50.8 per Cent of Power

The consumption of power for hoisting purposes varied between 1.4 per cent and 50.8 per cent of the total demands for power. The percentage was not a direct function of the depth of the mine nor of the production. The mine having the greatest proportional hoisting consumption averaged only 2,000 tons per day, whereas mines that produced around 4,000 tons used less than 20 per cent of the total power for this purpose. Mines whose depths were between 200 ft. and 300 ft. had an average hoisting percentage of 15.9 while those between 300 ft. and 400 ft. had a corresponding average percentage of 14.2. But these items must not be made the grounds for stating rules because many idiosyncrasies tend to wholly discredit only generalities. The weighted average demand for hoisting was 17.2 per cent.

The average demand for ventilating was 22.2 per cent but it varied from 2.2 per cent to 61.9 per cent. It is noteworthy that these extremes occurred in mines having small productions. Considerable variance appeared in the ventilation demands of mines having equal outputs regardless of the size of the output. Thus one of

the 3,000-ton mines consumed 38.9 per cent of its total power for operating the fans whereas another 3,000-ton mine used only 17.3 per cent. The fans of one 4,000-ton mine consumed 12.7 per cent whereas those of another mine of the same production consumed 26.4 per cent. One mine with a daily output of only 1,600 tons showed this same percentage for ventilation.

The smallest mine, from a production standpoint, had the greatest proportional demand for pumping, namely, 52.2 per cent. However, this was abnormal and not approached in another instance. The weighted average for pumping including some dry mines, was 5.0 per cent. No direct ratio or relationship could be discerned between production and pumping demands.



Modern Coal Mine Power Plant

From this plant power is distributed to several nearby mines; there it is used both outside and inside. Large power cables hanging in boreholes supply the cutting and haulage machinery.

The classification under the term mining means the undercutting of the coal. From a power demand of nothing in mines where all coal was cut by hand, the percentage varied to a maximum of 45.7, this being in a mine producing 2,200 tons per working day. The true or weighted average demand was 22.1 per cent. Again the scale of production bore no consistent relation to the power requirements. The smallest mine had a percentage of 22.0 and the biggest a percentage of 22.8—paradoxically close to each other and to the general average. This item for one 2,000-ton mine was 2.5 and for another mine of same output it was 29.6. For one 4,000-ton mine it was 13.2 and for another it was 43.8.

Haulage had an average percentage of 23.0. Disregarding animals as power units, the percentage range was from nothing in mule mines up to 51.0. Still again the proportion was not a direct function of production. The weighted average for mines whose productions were below 2,000 tons per day was 31.2. The corresponding figure for the twelve largest mines was 30.4. These close figures are somewhat conclusive until we note that, for the mines in the lesser class, this percentage fluctuated from 6.2 to 34.9, and in the largest class the fluctuation was similarly between 6.2 and 41.1.

If any general deduction from the foregoing discussion is possible, it is that, in general, ventilation, mining and haulage consume approximately equivalent proportions of power, and that each is approximately equal to the sum of the hoisting and pumping requirements.

It must be borne in mind that I am discussing power requirements by percentages and not by magnitudes. One mine's 24-per cent demand for its hoisting might be less in horsepower-hours than that of another mine whose demand was say 17 per cent. At one mine whose mining demand stood at 34 per cent, the actual power consumption may have been less than that at another mine whose percentage was say 20. In other words, the figures permit no comparison of quantitative consumption. They prove conclusively, however, that it is impossible to fix any dependable relationship between the several consumptions of power in coal-mining operations.

The weighted average percentages of total power consumptions at fifty representative Illinois shaft coal mines are as in Table I.

Table I—Percentage Consumption of Power at Fifty Illinois Shaft Mines

Hoisting	17.2
Ventilation	22.2
Pumping	5.0
Mining	22.1
Haulage	23.0
Miscellaneous	10.5
Total	100.0

This distribution, however, cannot be safely applied to Illinois coal mines in general. As a matter of fact, there is not one mine in the list for which this distribution is even approximately applicable. The distribution of total power is a distinct problem for every mine.

Progress Made in Mine Communication

In the course of experiments designed to perfect methods for the establishment of wireless communication between persons entombed in mine disasters and rescue workers on the surface, conducted by the Department of the Interior at the experimental coal mine of the Bureau of Mines, near Pittsburgh, Pa., signals have been transmitted obliquely through a distance of 800 ft. of rock by the use of the T.P.S., or ground conduction system, developed by the Signal Corps of the Army. Signals were also transmitted with little difficulty, by using compressed air piping, car rails, and other similar conductors. The intervention of such poor conductors as water, coal and mud, and the substitution of wooden for steel rails, did not interfere with the transmission of signals.

The T.P.S. method of ground telegraphy is a means of communication which requires no wire connection between the sending and receiving stations; but it is different from radio telegraphy in that the transfer of electrical energy from the transmitting to receiving apparatus takes place mainly by conduction, and to a much less extent, induction through the ground, instead of through the air as with radio. This method of signaling is for telegraphy only and cannot be used for voice or speech transmission.

Unless the Public Acts, Taxes Will Not Be Reduced

Surtaxes Higher in America Than Anywhere—Acquired Fortunes Favored by Surtaxes as Against Newcomers—No One Can Reasonably Assert War Was Fostered for Private Gain—Excessive Taxes Cripple Everybody

"PEOPLE of small means are subject under the existing law to a far smaller rate of income taxation in this country than in any country of Europe," says Otto H. Kahn in a little booklet entitled "Why I Favor the Mellon Tax Plan." "On the other hand," he adds, "considering only surtaxes, people of wealth in this country are subject to higher rates than in any country of Europe, not to mention the fact that 'capital profits' are not liable to income taxation at all in England and in other Europeon countries, whereas our taxation applies to all kinds of income or profits.

"That we are able in this country to meet our budgetary requirements while placing but a light burden of income taxation on those of small means and practically none at all on families with incomes less than $4,000 a year, is a fortunate and desirable situation.

"But surely there must be some socially and economically sound reason for the fact that not a single European country has thought it wise to raise its surtaxes to the level of ours, notwithstanding the fact that they have greater need than we to find sources from which to draw revenue for the Government."

Mr. Kahn adds that "our highest surtax is 50 per cent, whereas in England, 30 per cent is its maximum figure. England's normal income tax rate, that is, the rate payable by the man with a small or moderate income, is 22½ per cent, which is approximately three to six times as high as our tax rate on small or moderate incomes. Consequently, taking the normal and surtax rate together, the comparison is less striking, being 58 per cent maximum with us as against 52½ per cent maximum in England."

Present System Favors Acquiring Fortunes

Speaking about the effect of the surtax on the acquirement of wealth by the budding capitalist, Mr. Kahn remarks "The road to conspicuous material success is blocked to the newcomer by the barricade of the surtaxes. Surprising though it will sound to the advocates of extreme taxation, it is a fact that by these very imposts, existing wealth is fortified against would-be competitors, and the handicap against him who starts with little is made greater.

"Manifestly, when a man sets out with small capital the possibility of his accumulating large resources is greatly diminished by a law which compels him to turn over to the Government in cash the larger part of that which conspicuous ability, inventive genius, daring enterprise or good fortune may enable him to earn."

Combating the idea that the high surtax is justifiable because it merely recovers pelf from those who profiteered during a war which they fostered for their own gain, Mr. Kahn says that no one could accuse President Wilson, who declared war, of seeking any but his own counsel, and certainly not of truckling to Wall Street and the moneyed interests; that the period prior to the war was ideal for the making of money, for the Allies "had to buy large and increasing quantities of some of the products of our soil and industries, practically regardless of profit; that the war promised to Wall Street only control of prices, differential war taxes on the well-to-do and rich, and that the war injured capital by draining the market by its bond issues of all available funds.

He adds that only 4 per cent of our population was conscripted and less than one per cent saw actual fighting, whereas the incomes of the wealthy were conscripted to an extent rising to nearly 80 per cent. The conscription fell more heavily on the well-to-do, for the children of the rich were not able to show that they "were needed at home to support dependents or to man essential war industries" and so were not exempt from the draft. Mr. Kahn adds, "The draft regulations discriminated, not, as was too often the case in former wars, in favor of the son of the rich man but in favor of the son of the poor woman."

How High Taxes Injure Workman and Industry

He argues that the surtax percolates downward and affects the man who does not have to pay it directly; that, as taxes must be paid in cash and not in book assets, bills receivable or inventories, they unduly unsettle business and make for instability of industry, and that the money taken from industry and given to the Government is of less potential value than when held in private hands. Mr. Kahn adds, "Even if capital did not have the refuge of tax-exempt securities, its dynamics would be bound to deteriorate under the influence of extreme surtaxes, and some of it would sullenly resign itself to a much lessened return rather than venture into a game governed by the rule that the player takes all the risk of possible loss, all the burden of work and worry, but gets only a minor share of possible profits.

"You can take a horse to water, but you cannot make him drink. You can starve capital, but you cannot make it take the risk, worry and effort of new enterprise, unless you hold out the eventuality of adequate reward.

Mr. Kahn declares that capital did not for some time after the war was over take refuge in tax-exempt securities. Convinced at last that the taxes were not justified but were the outcome of class privilege, political considerations and sectional animosity "capital took such steps as were lawfully open to it to escape from what it regarded as unwarrantably and unnecessarily burdensome taxation." This statement is clearly borne out by the following figures of surtaxes collected by the Government on incomes of $300,000 or above:

1917	$201,937,975	1920	$134,709,112
1918	220,218,131	1921	84,797,344
1919	243,601,410		

The Citizens' Committee in support of the Mellon Tax Reduction Proposal, Hotel Biltmore, New York City, which publishes this brochure, announces a National Tax Reduction Week beginning Monday, April 7, and urges that representative community and industrial associations flood Washington with letters and telegrams during that week. Unless active steps are taken to turn the tide against self-seeking politicians, taxes will not be reduced.

News Of the Industry

Guaranteed Contract Urged to Restore Confidence in Coal Industry

Co-operative Plan Proposed to Insure Delivery in Case of District Strike—Three-Year Pact with Customers Would Enable Union Producer to Offer Inducements to Overcome Price Disadvantage

By Paul Wooton
Washington Correspondent of *Coal Age*

With the approach of the time when most coal contracts expire, there is a revival of the discussion of the advantages which could be obtained from new types of contract. The public utilities long have been insisting on more binding contracts. With consumers generally the present form of contract is in disrepute. Under existing conditions many believe contracts could be put on a basis which would be more satisfactory to the purchaser of coal and which would be of material benefit to at least the union operator.

Just at this time the ideal condition for the union operator would be to negotiate three-year contracts with his customers. Many believe there are contractual inducements which he can make which will tend to overcome the disadvantage he is under in the matter of price. If consumers could be insured constancy of supply, any price differential likely to exist between union and non-union coal, in many instances, would not be the controlling factor in the purchase.

Pledge Would Assure Buyer

If the union producer were to pledge himself to ship as long as he has any coal, sacrificing his own spot tonnage if need be, it obviously would be a bid more likely to be accepted than were it offered under the conditions of present contracts, which so frequently are unsatisfactory to the purchaser during periods of car shortage or strikes. If, in addition to the guarantee to ship coal as long as the producer has any coal not covered by other contracts, provision were made for an arbiter in case of dispute, it would have further appeal.

The present discussion of forms of contract, however, which really had its beginning during Mr. Wadleigh's administration as Federal Fuel Distributor, goes much further than the removal of the free coal provision. Some suggest that producers would be well advised at this time to interest consumers in sliding-scale contracts—the variable feature applying to deliveries as well as to prices. Special rates would be offered during the off months so as to equalize the annual output. In this way the operator could plan to have his surplus of spot coal entirely free from contract obligations at a time when transportation troubles are most likely.

There is a well defined feeling on the production side of coal that something should be done to re-establish the reputation of the coal contract. The suggestion has been made that meetings could be arranged by districts between operators and their customers at which agreement could be reached as to types of contracts. For instance, if the operators in one district were to invite representatives of the National Association of Purchasing Agents, of the wholesalers and of the retailers with whom they deal, and should they be able to negotiate certain standard forms of contract, it would do much to bring about mutual confidence and respect.

The suggestions being made go even further. In order to insure further the constancy of supply under contracts the thought is advanced that the producers in a given field could underwrite each other's contractual obligations. Twenty-five operators, for instance, might agree to fill collectively the contract of one of their number were his production to be interrupted. The collective action might go even further and arrangements be made between districts, whereby under certain conditions other districts would attempt to fill the contracts held by operators in the event of a district strike.

Miners Ratify

Naturally the miners ratified the wage agreement which the international officers of the United Mine Workers signed with the operators of the Central Competitive Field at Jacksonville, as foreshadowed in *Coal Age* last week. The official rank and file count of miners voting in the referendum was 164,858 to 26,253. Half the opposition, or exactly 13,032 votes, was cast in Illinois, where the rebel element in the United Mine Workers is strongest.

Scale Renewed for 3 Years In Central Pennsylvania

Representatives of the operators and union miners of the central Pennsylvania bituminous coal field signed an agreement at Philadelphia March 29 continuing the present wage scale for three years.

A modified set of demands was presented by the miners March 27 withdrawing the abolition of the "penalty clause," providing for suspension for the mining of "dirty" coal. The modified demands were presented at a meeting of subcommittees of miners and operators appointed to discuss the differences that had arisen in the negotiations and the breach was patched up.

To explain this scheme, southern Illinois is used as an example. Operators in that district are anxious to expand their market in the Northwest. Their chances would be greater were their salesmen in a position to make some such statement as this to the Northwestern consumer: "This contract will be signed by my company, which obligates itself to sell no spot coal until the contract is filled. Moreover, it is underwritten by twenty-five other operators producing similar coal, who collectively will make up this obligation should my company fail. In the event that southern Illinois should be tied up in a strike, we have an arrangement whereby operators in Colorado, Utah and Wyoming will undertake to supply the coal called for by this contract."

If any step toward co-operative marketing is not practicable at this time, the suggestion is made that co-operative advertising at least could be attempted. The success of the anthracite operators' coal economy shows points the way for similar action on the part of bituminous associations. The Illinois associations, for instance, by such means could call the attention of the Northwest to the advantage of the use of bituminous coal. If they were to set up standards of purity and sizing, that fact could be advertised in a market where the use of Illinois coal could be increased greatly. In that connection, attention is called to the fact that it was careful preparation as much as it was good coal which built up the trade value of the name "Pocahontas."

It is a new era in the coal business. Perhaps never before has such an opportunity existed for the exercise of ingenuity and initiative. Progress, however, is thought to lay more along the line of joint action by the operators than any other way.

Blast in West Virginia Mine Kills 26 Miners

An explosion in No. 2 mine of the Yukon-Pocahontas Coal Co., at Yukon, McDowell County, W. Va., early in the morning of March 28, caused the death of twenty-six miners. Fifteen bodies were recovered the same day by volunteer rescuers. A U. S. Bureau of Mines rescue car at Nemours, near Bluefield, was rushed to Yukon as soon as news of the explosion was received. R. M. Lambie, chief of the State Department of Mines, also left Welch immediately for the scene of the disaster.

Yukon is in an isolated section, without telephone service, and details of the catastrophe have been meager. Only six miners were rescued, but a number of others, who were late in arriving for work, escaped injury.

The presence of mind of T. J. Dawson, who became superintendent of the Yukon-Pocahontas Coal Co. at Yukon, W. Va., three weeks ago, probably saved the lives of 125 miners in No. 1 mine when the explosion in No. 2 mine occurred. When the blast came Superintendent Dawson rushed into No. 1 to warn the men there. Some of these workers were injured when they were knocked down by the force of the explosion.

Believe Head Lamps the Cause

Officials of the company and mine inspectors who have been in the mine since the blast believe the explosion was caused by the head lamps of three miners who took a short cut through an abandoned working to their places of work.

The mines of the Yukon-Pocahontas Coal Co. at Yukon, W. Va., are exceptionally dry. Describing No. 1 mine in *Coal Age*, June 1, 1922, A. F. Brosky, who made a visit to the mine, says that it had never had a pump underground and had never needed one, so dry were the workings. In the winter of 1917 seventeen men were killed at this mine in an explosion. In June, July and August the mine was sprinkled once a week and during the remaining nine months the roads were wetted down daily.

For this sprinkling, in which the whole mine participated, a 500-gallon water car was used. A 300,000-gallon tank standing 300 ft. above the coal was used as water supply and a 12,000-gallon tank at a much lower level was fed by gravity from the overflow of the larger tank. A 3-in. water line ran down the main entry for a distance of 7,000 ft. Four taps on this line at regular intervals provided for the filling of the water car, which was pulled along the roadways by an electric locomotive.

As far as possible doors were eliminated, and the machinemen carried safety lamps and were instructed to examine the mine face for gas before taking the machine beyond the room neck. Permissible powder exploded by blasting machines was used exclusively for shooting. Open lights were permitted, but the mine was examined twice daily prior to the entry of the day and night shifts.

E. S. Brooks

Mr. Brooks, whose death at his home at Rock Springs, on March 17, was recorded in *Coal Age* last week, was well known as a coal operator and mining man throughout the Central Western and Pacific states, having entered the service of the coal department of the Union Pacific Ry. in 1880, previously serving the railway company as a locomotive fireman. His first coal mining work related to the prospecting of the Gunnison County, Colorado, anthracite fields, thereafter serving in various capacities, including mine clerk, salesman, etc. He was appointed superintendent of the railroad company's Hanna (Wyo.) mines in 1894, and became vice-president and general manager of the coal company in 1920.

Bill Limits Trade Commission To Probes Authorized by Law

The Independent Office Appropriation bill, presented to the House at Washington March 27, specifies that none of the funds provided may be used by the Federal Trade Commission for investigations directed by the President or either house of Congress except those authorized by law. The adoption of this provision will make it necessary for each resolution of Congress directing an investigation by the Federal Trade Commission to authorize an appropriation sufficient to cover the expense of the investigation if it is one not relating strictly to a violation of the anti-trust laws.

The commission estimates that $315,000 will be required during 1925 for this class of work. The Appropriations Committee, adopting the above mentioned limitation, allowed $63,440 to provide for the normal growth of the work of the commission, the salary of the secretary of the commission being also included in this sum.

The work which the commission has this year had to do, and over which it has no control so far as the initiation of the work is concerned, has been so great that it has been slipping back, until at the present time it is about three hundred cases behind on its docket. That practically amounts to a denial of justice on the part of those who are seeking protection, Commissioner Huston Thompson told the Appropriations Committee when explaining the situation.

Union Signs Open-Shop Pact With Ky.-Tenn. Association

The open-shop four-year agreement which the union has officially signed with the Kentucky-Tennessee Coal Operators' Association is getting broad circulation at the hands of non-union operators. The new agreement now in effect in that region of union weakness runs to April 1, 1928, and contains some provisions interesting to those who struggle with labor in solidly unionized territory.

Mining rates are reduced in the region to a point 20c. a ton below the rates in effect from 1920 to 1922. Day rates for several classes of labor follow: Machine runners, $5.40; blacksmiths and motormen, $5; boss drivers, head trackmen, head timbermen and engineers, $4.84; machine helpers, couplers, track helpers, wiremen and pipemen, pump men and timbermen's helpers, $4.44; outside laborers, unclassified, $3.72; yard couplers, $3.64. "Inexperienced loaders" (a term unknown in union fields) are paid $3.80 until they learn their trade.

There is no check-off except a deduction of $1 per pay from each man's wages to be used to defray expenses of an arbitration system which the agreement sets up. The arbitration board comprises five men—two operators, one from each side of the state line, two miners of similar geographical representation and a chairman called an "umpire," to be chosen by the four. This board is to handle all cases under the agreement which cannot be adjusted by the mine committee and by direct dealing with company officials.

To Eliminate Small Abuses

There are clauses in the contract aimed at some of the most flagrant small abuses practiced generally in union fields. For instance the number of official holidays is distinctly limited and no miner may quit work to attend a funeral unless the deceased is a member of his family or an employee in the mine in which he works. Any miner who lays off to attend a funeral and doesn't attend is to pay a fine of $2.50 to the family of the deceased.

The system of penalties under the contract applies to the companies too. In case a company shuts down a mine while some contract grievance is being threshed out it is required to pay the whole working force $2 a day per man.

The open-shop clause reads as follows: "It is distinctly understood and agreed that men shall not be discriminated against on account of membership or non-membership in any organization nor shall any member of any organization interfere with or discriminate against those who are not members, nor shall men who are not members interfere with or discriminate against those who are."

This agreement was signed by the Kentucky-Tennessee Coal Operators Association, M. I. Roach, president, and T. J. White, secretary, and by the United Mine Workers of America, William Turnblazer, district president, and E. L. Reed, district secretary, and by the miners' district scale committee.

Hearing on New Mine-Rating Scheme To Be Held at Washington, April 23

An important hearing in the matter of the rules governing the ratings of bituminous-coal mines has been announced by the Interstate Commerce Commission to take place April 23 in Washington before Commissioner Aitchison. At that time consideration will be given the suggestions of the Harding Coal Commission in connection with car distribution. In announcing the hearing, a statement was given out by the Interstate Commerce Commission, in part as follows:

"On June 17, 1922, the commission instituted a general investigation, *In Re Rules Governing Ratings of Coal Mines Other Than Anthracite and the Distribution of Cars to such Mines*, under Docket No. 13,896. Extensive hearings were had in this matter during the summer and fall of 1922.

"An agreement was reached whereby the carriers would undertake to rate the mines through a mine-rating or inspection bureau, the members of which should be exclusively in the employ of the railway company. The principal factors used in determining the mine ratings were likewise agreed to. These factors included: (1) Physical conditions, (2) past performance, (3) labor supply, and (4) other factors that may affect the production and shipment of coal.

"The commission informally approved a fair trial of the code proposed as a result of the agreement reached after the conferences. The carriers accordingly promulgated new mine-rating and car-distribution rules, effective as of March 1, 1923, which have been maintained since that time.

Helping Off-Season Delivery

"To encourage the off-season delivery and storage of bituminous coal, the U. S. Coal Commission in its report dated Sept. 20, 1923, recommended that this commission allow the commercial ability to sell coal the year round to be the controlling influence in the distribution of railroad cars in months of transportation shortage. The principle suggested is not the controlling element in the distribution rules now in effect.

"The suggestion has been made to the commission that the principle embodied in the Coal Commission's report and embodied in the proposed code of rules attached would be legal and serviceable. The parties are invited to develop this phase of the case upon the record."

The proposed code embodying the rules recommended by the Coal Commission follows:

"(1) Whenever the supply of coal cars is inadequate to fill all orders of all mines within the limit of their physical capacity, distribution of such cars to mines shall be made upon the basis of mine ratings determined as hereinafter set forth.

"(2) Mine ratings used as the basis of coal-car distribution shall be fixed as a combination of two factors—physical capacity and commercial capacity—giving equal weight to each.

"(3) Physical capacity of mines shall be determined in accord with present methods, and expressed in terms of the number of equivalent 50-ton cars per working day. For the purpose of combining physical capacity and commercial capacity to fix mine ratings, the physical capacity shall be deemed to represent 100 per cent in terms of percentage, and that figure used in the manner set forth below.

Figuring Commercial Capacity

"(4) Commercial capacity shall be arrived at by:

"(a) Determine the actual number of equivalent 50-ton cars loaded and shipped per calendar day, not including Sundays, during the last period of not less than two months during which the number of available cars was in excess of the number ordered by all mines within the limit of their physical capacity. If the last such period of car surplus exceeds six calendar months, only the last six months of the period shall be used in determining the average. Full consecutive days in excess of one full day lost by a mine by reason of accident, strikes or railroad failure during the period used, shall be deducted in arriving at the average, when the mine throughout the calendar month in which the failure occurred loaded and shipped its full physical capacity rating on every working day that cars were furnished and the mine was not prevented from loading by accident or strike, but if a mine failed to load and ship on all days when it was not prevented by reasons enumerated, the number of days on which it failed shall be subtracted from the number of full consecutive days in excess of one full day lost by reasons enumerated, and allowance made for the remainder only.

"(b) The commercial capacity in average cars per working day determined as prescribed in sub-paragraph (a) shall be compared with the average physical capacity, in cars, for the same number of days and period of time, to determine percentage ratio of commercial capacity to physical capacity during the surplus period used.

"(5) To 100 per cent representing factor of physical capacity, add the percentage arrived at under paragraph 4, representing commercial capacity, and divide the result by 2.

"(6) To the current physical capacity, expressed in cars, apply the final percentage arrived at under paragraph 5, and the result will be the current mine rating in equivalent 50-ton cars.

"(7) Mines should be permitted to order cars up to the limit of their physical capacity. The distribution, however, should be made among mines in proportion to their mine rating, as arrived at under paragraph 6, or their order if less than mine rating under paragraph 6. If during any monthly period of distribution any mine or mines shall be unable to load its or their proportion of the available cars, the average shall be distributable among the remaining mines in proportion to their mine rating, or order if less than rating.

"(8) In the absence of special provision the commercial capacity of a mine not in operation during the last period of car surplus would, in terms of percentage be expressed as 0 per cent. Adding this percentage factor to 100 per cent, representing physical capacity, and dividing by 2, would give a resulting percentage factor of 50 to be applied to current physical capacity for determining the mine rating. In other words, the minimum mine rating for any mine would be 50 per cent of the current physical capacity."

Hatfield Removes Chafin's Appendix—by Agreement

Don Chafin, Sheriff of Logan County, West Virginia, had his vermiform appendix cut out by one of the Hatfields March 29. This cutting affray had the Sheriff's approval, however, as he went to hospital at Huntington to have it done by a member of the Hatfield family, Dr. Henry Drury Hatfield, formerly Governor of West Virginia and one of the most skilful surgeons in the state.

Bitter political feuds which have marked the relations of Chafin and Hatfield in the hectic history of Logan County were forgotten, and Dr. Hatfield smiled broadly when he announced the operation was a complete success. The appendix was placed in a bottle of alcohol for preservation.

A radio receiving station has been placed in Sheriff Chafin's room at the hospital.

No New Cause Found for Castlegate Blast

Exhaustive investigation in the burned-out workings of No. 2 mine of the Utah Fuel Co., at Castlegate, Utah, has failed to reveal any new light on the cause of the explosion of March 8 which killed every man in the mine, according to B. W. Dyer, district engineer for the Bureau of Mines. The attempt of the fireboss to clear out a small quantity of gas in room No. 2 off the sixth left entry is still assigned as the primary cause. The explosion spread from there.

The investigating board was composed of Dan Harrington, supervising engineer of the U. S. Bureau of Mines; Mr. Dyer, Fred K. Gaethke, engineer in charge of mine rescue car No. 9; H. E. Mann, engineer in charge of mine rescue car No. 2; R. M. Magraw, general superintendent of the U. S. Fuel Co.; William Littlejohn, general superintendent of the Utah Fuel Co., and John Crawford, coal mine inspector for the State Industrial Commission.

Findings of the board will be submitted next week to the Industrial Commission and the Bureau of Mines, said Mr. Dyer.

Reach Wage Agreement for Northern West Virginia

An agreement has been reached upon a new contract between the representatives of Northern West Virginia Coal Operators Association and the United Mine Workers. As a result there will be no suspension in the district, wherein almost 28,000 miners are employed.

The conference was held in the Southern Hotel, Baltimore, and the negotiations lasted more than two weeks. It was announced at the close of the conference on Friday, March 28, that all basic day and tonnage rates now in force had been reaffirmed. Certain changes were agreed upon in relation to working conditions, these being for the most part concessions to the miners.

Day wage rates reaffirmed ranged from $6.74 to $7.26 a day. Tonnage rates vary from 62.7c. for machine loading to 87.6c. for hand work. The new contract is based upon "the Jacksonville agreement," just ratified in the Central Competitive Field. It is expected that the agreement reached in Baltimore will be indorsed by the operators association and the miners' union.

Barrett Resigns; Trouble Looms in Eastern Canada

Silby Barrett, provisional president of the United Mine Workers for the eastern Canada district, has presented his resignation to William Dalrymple, representative of the International board of the U. M. W. The resignation will be acted on at a meeting of the International board in Indianapolis, to be held in the near future. William Huston has been appointed acting provisional president until the International executive board meets.

The resignation follows the rejection of the agreement negotiated with the operators in eastern Canada. Barrett had advocated the ratification of the agreement. The vote of the miners, however, exhibited a substantial plurality against acceptance. Once more tension is felt in the eastern Canada coal fields, which have been in continuous ferment for the past four years. With the liberation from prison of J. B. McLachlan, deposed secretary-treasurer of the district, the tension is growing. Another strike looms ahead in the mines owned by the British Empire Steel Corporation.

Safety Council and Mining Institute Meetings

The next regular conference of sectional chairmen of the National Safety Council will be held at Cleveland, Ohio, Saturday, May 17, following the last of this season's meetings of the engineering section of the council, May 16.

The Coal Mining Institute of America will hold a meeting in Pittsburgh, Pa., Dec. 3-5, according to an announcement by H. D. Mason, Jr., secretary-treasurer.

Wage Agreement Deferred In Kanawha Field

The conference of union operators and the scale committee of District 17, United Mine Workers, scheduled for Friday, March 28, at Charleston, was postponed owing to the absence of miners' representatives at a meeting with northern West Virginia operators at Baltimore. Much uncertainty prevailed, therefore, as to whether it would be possible for union operators and miners in the Kanawha region to get together before the expiration of the old contract on March 31 in time to avert a strike of union miners in that section of the Kanawha field still in union territory, though it was hoped that some sort of an agreement would be worked out.

Early Conferences Barren

At the first conference held at Cincinnati several weeks ago, which lasted two days, the representatives of the miners demanded acceptance of the Jacksonville agreement. The operators refused. Another conference was held at Washington on March 25 but was of short duration, adjournment being taken until Friday, March 28, at Charleston.

The fact that non-union Kanawha operators are paying much lower wages than fixed in the Jacksonville agreement presents union producers with a difficult problem, as it will be impossible for them to compete with the non-union mines if the 1922-1924 wage scale is paid. Comparatively few union mines in the Kanawha field are working at the present time owing to low prices, poor markets and high wages. Whatever may have been evolved between the time this was written and the time it appears in print, it seemed almost certain that the miners would insist that the union operators of the Kanawha field accept the same terms as agreed upon with northern West Virginia operators.

Cut in West Kentucky Hangs Fire Until April 15

The western Kentucky deadlock between operators demanding a 25-per cent wage reduction and miners demanding a continuance of the 1921 scale for three years appears to be softening. Instead of a strike or lockout April 1, the two parties agreed last Friday at Madisonville, Ky., to extend the existing agreement to April 15 while President John L. Lewis, at International headquarters, tries to determine some way to change the situation. It is prophesied that if he will not agree to an agreement cutting wages 25 per cent for at least one year, no agreement of any kind will be signed. The field would then be largely non-union. This negotiation applies only to that section of western Kentucky centering in Muhlenberg County. The western part of the western Kentucky field is already largely non-union although a union contract with several operators, signed last spring, has another year to run.

Southwest Fields Suspend

CHICAGO, April 1 — The entire Southwestern district, comprising Kansas, Oklahoma, Missouri, and Arkansas, shut down April 1 pending the outcome of wage negotiations now going on in Kansas City, Mo. There is no evidence of a break in the deadlock between miners and operators. The operators say they will demand a wage reduction and will submit a revised scale after "more important matters now in subcommittee" are disposed of. It is generally understood that unless the miners grant important changes in working conditions the operators will demand a 40-per cent wage reduction. It is predicted that negotiations will run well into the summer.

Lehigh & Wilkes-Barre Co. Pays 200 per Cent Stock Dividend

Having formally approved the plans of the board of directors to increase the capital stock of the company from $10,000,000 to $30,000,000, stockholders of the Lehigh & Wilkes-Barre Coal Co. on March 27 voted themselves a 200 per cent stock dividend, payable 100 per cent in common and 100 per cent in preferred stock. The new stock will be distributed April 1 to stock of record March 26.

C. F. Huber, president of the company, in a letter to stockholders, said that the par value of the stock heretofore has not reflected the actual investment in the business or the amount of the investment of the holders of a large majority of the stock.

"From the organization of the company in 1874 to 1909," he said, "no dividends were paid to the stockholders, the company retaining the entire current earnings in the development and growth of its business. On Dec. 31, 1923, the company's surplus exceeded $17,000,000, the major portion of which was accumulated prior to March 1, 1913, and is invested permanently in the company's business. To bring the company's capital more in line with such permanent investment the board of directors has declared this dividend."

New York City Departments Seek Coal Bids

Bids will be opened on April 8 by the Department of Purchase of New York City for furnishing and delivering to several of the city departments nearly 450,000 net tons of coal and coke. The tonnages required are as follows: No. 1 buckwheat, 206,730 tons; No. 2 buckwheat, 31,630 tons; No. 3 buckwheat, 47,850 tons; run of mine, 89,815 tons; stove coal, 5,630 tons; chestnut, 120 tons; pea coal, 690 tons; Georges Creek coal, 144 tons; coke, 350 tons, and mixed coal (two-thirds No. 3 buckwheat and one-third run of mine), 55,100 tons.

Leon Besson Is Made Kansas Inspector After Furor

Leon Besson is now state coal mine inspector for Kansas, succeeding James Sherwood. His appointment, effective April 1, has created considerable furor in Kansas politics, and marks a victory of the Alexander Howat rebel faction within the United Mine Workers organization in the Kansas district. Besson's appointment by Governor Jonathan I Davis was challenged by Judge John H. Crawford, of the Industrial Court of Kansas, who voted against the appointment and favored Ernest Shaw, of Weir, Kan., on the ground that Besson had not passed the state mining board's examination. But Judge Crawford was outvoted by the other two members of the industrial Court, both recent appointees by Governor Davis.

Besson is a socialist and an avowed Howat man in the struggle Howat is making to get back into the miners' union and to win back control of the Kansas district from the union administration at Indianapolis. His appointment was opposed not only by miners of the administration faction but also by many of Governor Davis' own party. Davis was elected Governor on an anti-Industrial Court platform, and his causing his two appointees on that court to appoint Besson inspector without undergoing an examination and a man whose democracy is seriously questioned promises to be an incident of no small proportions in Kansas state politics.

James Sherwood, who has been inspector for five years, will return to employment with the Associated Companies handling mine liability insurance. A year ago the Associated Companies offered Sherwood a position at a tempting salary, but when Judge Crawford told the concern Sherwood was needed on his official job it consented to wait until he had completed his service to the state.

Spent His Long Life Underground

Ten thousand days in a coal mine is the record claimed by "Uncle Steve" Bone, of West Frankfort, Ill., now 71. He was born in England and started working in the mines with his father at the age of seven years. He has worked for forty-nine years in a mine now owned by the Chicago, Wilmington & Franklin Coal Co. Before labor was organized Bone says the contracts were "ironclad" and a miner could either sign them or get out. He also worked 15 hours a day in some instances in the early days. During his long service in the mining industry Bone has had many narrow escapes, but was never entombed or seriously injured. It is estimated that he has traveled 1,640 miles up and down in the cages and has loaded 139,977 tons of coal. Bone's sons are miners.

Harry N. Taylor

The former president of the National Coal Association now heads the United States Distributing Corporation, which reports net income of $592,962 for 1923.

More Coal Lands for Henry Ford?

Henry Ford has closed negotiations with the Davison-Connellsville Coal Co. for the purchase of 3,700 acres of coal land in Fayette County, Pennsylvania, and Monongahela County, West Virginia, according to a report from Uniontown, Pa., March 25. The price will reach $10,000,000, it is said.

Representatives and engineers of the Ford interests have been on the ground some time inspecting the property and the mines, which are in operation. Mr. Ford, it is said, wanted the lands to provide fuel for his glass and subsidiary companies in the Pittsburgh district.

A SPECIAL DISPATCH TO *Coal Age*, March 17, from Salt Lake City, Utah, covering the recent disaster at Castlegate, stated that R. M. Magraw was superintendent of the Utah Fuel Co. mine. This was an error. Mr. Magraw is general superintendent with the United States Fuel Co., Salt Lake City.

545,400,000 Tons of Bituminous Coal Produced in United States in 1923

Total output of soft coal in the United States in 1923 was 545,400,000 net tons, according to preliminary estimates by the U. S. Geological Survey.

The estimates by states, like that for the country as a whole, are based on weekly reports of cars loaded by the 137 principal coal-carrying roads, furnished through the courtesy of the American Railway Association. These weekly loadings afford a substantial basis on which to estimate the total output because the carriers reporting load about 85 per cent of all the coal produced. Allowance also is made for mine fuel, coal coked at the mines local sales, shipments by water and over certain small roads not reporting.

Many interesting facts are revealed by the table, the most striking of which are the sharp increase in the output of West Virginia, which for the first time passed the 100,000,000-ton mark, and the maintenance of production in Kentucky close to the high record established in 1922. Probable factors in the high rate of production in those states were the demand for low-volatile coals as substitutes for anthracite for household purposes, and for high-volatile coals for the coke industry. No new high record was established in Pennsylvania, but the 1923 output—approximately 160,000,000 tons—was 41 per cent higher than in the strike year, 1922; 38 per cent higher than in 1921, and about 10 per cent less than the maximum production of 1918.

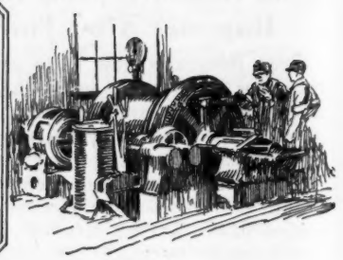
Estimated Production of Coal in 1923, by States, Compared with 1920, 1921 and 1922.

(In Net Tons)

	1920[a]	1921	1922[a]	1923 Estimated
Alabama	16,294,099	12,568,899	18,324,740	18,200,000
Arkansas	2,103,596	1,227,777	1,110,046	1,400,000
Colorado	12,278,225	9,122,760	10,019,597	10,300,000
Illinois	88,724,893	69,602,763	58,467,736	84,000,000
Indiana	29,350,585	20,319,509	19,132,889	27,000,000
Iowa	7,813,916	4,531,392	4,335,161	6,500,000
Kansas	5,926,408	3,466,641	2,955,170	4,500,000
Kentucky	35,690,762	31,588,270	42,134,175	41,000,000
Maryland	4,065,239	1,827,740	1,222,707	2,700,000
Michigan	1,489,765	1,141,715	929,390	1,200,000
Missouri	5,369,565	3,551,621	2,924,750	3,800,000
Montana	4,413,866	2,733,958	2,572,221	3,300,000
New Mexico	3,683,440	2,453,482	3,147,173	2,700,000
North Dakota	948,625	864,903	1,327,564	950,000
Ohio	45,878,191	31,942,776	26,953,791	40,000,000
Oklahoma	4,849,288	3,362,623	2,802,511	3,550,000
Pennsylvania (bituminous)	170,607,847	116,013,942	113,148,308	160,000,000
Tennessee	6,662,428	4,460,326	4,876,774	6,100,000
Texas	1,615,015	972,839	1,106,007	1,100,000
Utah	6,005,199	4,078,784	4,992,008	4,600,000
Virginia	11,378,606	7,492,378	10,491,174	11,000,000
Washington	3,757,093	2,428,722	2,581,165	2,950,000
West Virginia	89,970,707	72,786,996	80,488,192	100,100,000
Wyoming	9,630,271	7,200,666	5,971,724	8,200,000
Other States [b]	159,054	180,468	253,126	250,000
Total bituminous	568,666,683	415,921,950	422,268,099	545,400,000
Pennsylvania (anthracite)	89,598,249	90,473,451	54,683,022	95,444,000
Grand total	658,264,932	506,395,401	476,951,121	640,844,000

(a) Includes output of "wagon mines," for which data were not available in other years.
(b) Alaska, California, Idaho, Georgia, North Carolina, Oregon and South Dakota.

Practical Pointers For Electrical And Mechanical Men



Old Centrifugal Mine Pump Made Good as New

About three years ago a three-stage centrifugal pump was removed from one of our mines because it would no longer deliver anywhere near its original capacity. The mine water had eaten away some of the inside parts and much water leaked from stage to stage. Consequently, much of the water was merely circulated from one stage to another. Like many other pumps which have given a reasonable amount of service this pump was destined to land in the scrap heap. But before finally discarding it we decided to open it and see just what had happened. We expected at least that we would learn something about its design and possibly might find something which we could pass on to the manufacturers for their information.

Not long ago we found an opportunity to open up this pump to see just what had happened. Upon close inspection we found that the separating rings between the various stages were badly

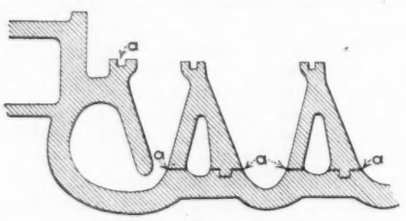


Fig. 1—Original Joint Between Separator and Casing

The shallow tongue in the joint between the space separator and the casing, soon corrodes away and leaves considerable space for the mine water to leak from stage to stage.

eaten away at the line where they are fitted to the outer casing. The leakage through these spaces was not unusually large but was sufficient to prevent the pump from generating full capacity pressure and from delivering as much water as its size would indicate. Fig. 1 shows how the separating rings were fitted to the outer casing. It will be noticed that the tongue at the joint extends but a short distance into the groove in the casing; in fact, the dovetailing at the joints was not more than ⅛ in. When the water started to corrode the metal at the joint it soon formed an easy passageway from one stage to the other. Just as soon as this condition existed the flow of water through the joint increased rapidly and the corrosive action of the water was quickened. The dirt in the water passing through this joint brightened the surface of the metal and thus the

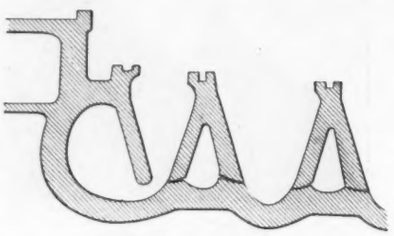


Fig. 2—How Joint Was Opened by Mine Water

Dirt in the mine water polishes the surface of metal thus increasing the corrosive action of the acid in the water. The leakage from stage to stage soon increases when there is a direct flow of water through the joints.

acid in the mine water had little difficulty in eating it away. Fig. 2 shows how the joints between the separating rings and the casing were worn to a considerable width. Further examination showed us that the rest of the casing and pump parts were not unduly worn.

A new casing for this pump would have cost between $800 and $1,000, but before buying it we decided we would try to repair the pump. Accordingly the casing was taken to our shop where it was rebored and fitted with rings designed to fill in the space between the stage separators and the casing. These parts are shown in Fig. 3, and it will be noticed that the tongue and lip at the joints were materially increased. The tongue fitting into the casing was made ½ in. deep. To fit the rings securely in position, they were coated with red lead and boiled in linseed oil.

Our repair of this pump was satisfactory as the pump has now been running for about nine months and is still delivering full capacity at a reasonably high efficiency. Just recently this pump has been permanently located in a place where we were about to install another pump of the same capacity. As a consequence we have saved over $2,000 by this little repair job. Another pump of this same type is now being repaired, and we feel sure we have found a means to materially increase the life of a pump of this type.

J. F. MACWILLIAMS.

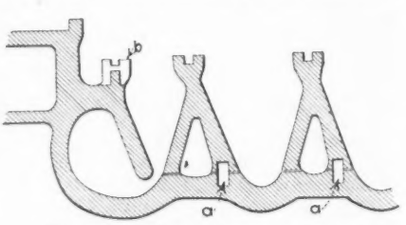


Fig. 3—Filler Rings in Place

These spacing rings were placed in position after the casing had been rebored. The deep tongue in the groove makes it much harder for the mine water to circulate in the joints. The saving resulting from this repair was from $800 to $1,000.

Making Power-Line Work Easy and Safe

Linemen are more frequently injured while working at the ground level than they are while working in the air. The injuries may be received in many ways, but most commonly they are due to slipping, tripping, falling, handling tools, or being struck by flying or falling objects.

A few years ago, practically all pole and post holes were dug by hand, and the poles were raised and placed in position with pike poles. With many companies, hole-digging machines have replaced the digging bar and shovel, and pole-erecting derricks have superseded the pike pole and "deadman." Power winches, chain hoists, and auto trucks are now much used in place of the old strong-arm methods which formerly resulted in so many strained backs and blistered hands; but with the introduction of these powerful devices more responsibility fell upon the shoulders of the foreman. Cables and ropes, blocks and slings all had to be strengthened.

The evolution of the auto truck as a vehicle for transporting men, material and supplies has been a revelation. Not many years back, the "heavy gang's wagon" looked like a homeward-bound junk man after a big day's business. The bottom of the truck was filled with a pile of ropes, blocks, hand lines, coils of guy wire and messenger cable and a tangle of miscellaneous wire, both new and recovered.

On top of this would be piled a collection of digging tools and hand tools of all kinds, a dozen or more pike poles of odd lengths, and a couple of cant-hooks. Above this conglomeration would be piled several partly filled wire reels, and above all, half a dozen or more linemen, hanging on by their eyebrows, trying to keep the load under them, while the horses drawing the wagon were traveling in high to reach the plant before quitting time.

Out of this mess came the highly perfected and systematized "traveling stockroom" of today "with a place for everything and everything in its place." Naturally, with system came increased safety. A well stocked first-aid kit is now always at hand, and the cuts, scratches, and sliver punctures, which formerly were responsible for many

cases of infection, are now treated on the job, and the probability of infection is greatly reduced.

With the introduction of labor-saving devices for line work and construction, there has been a consequent reduction in the number of men employed on any particular job. The reduction in the number of men has usually resulted in a "survival of the fittest," and to say that some men are less fitted for line work than others is stating it mildly. Instead it should be said that some men employed as linemen are a positive hazard, not only to themselves, but unfortunately to their fellow workers also.

There are, possibly many times in the course of a day's work when one lineman is compelled to trust his life to another, and often it is necessary that he place this trust in a wholly irresponsible and careless co-worker. While "juggling hot stuff" 30 or 40 ft. above ground, in the vicinity of other live wires or grounded cables, a lineman should not be compelled to work on the same pole with a man who has had a couple of wild nights and feels either like "telling the world" about it or going to sleep on the job.

Carelessness Causes Most Grief

The class of men who are attracted by this adventurous life cannot be expected to be recruited from the ribbon counters in department stores, but there are some engaged in the work who might more properly be employed as stunt flyers at an aviation field, or animal trainers with a circus. Carelessness, inexperience, and thoughtlessness cause more grief for the lineman than all of the other possible causes combined. Take the following cases and see in how many you can blame the accident to one or more of these three factors:

A lineman on a pole with a hand ax, placed it on a crossarm while he was changing his position. The hand ax was jarred off and in falling struck a groundman on the shoulder, sending him to the hospital for several weeks. Hand axes should never be taken up a pole.

Another lineman, reaching out from the pole to catch an insulator tossed up from the ground, lost his balance, came into contact with a live wire, fell to the ground, and was badly injured. Tossing up material or tools is against the rules of most companies. The handline is much more reliable, if not quite as speedy.

Here are two cases where a handline caused trouble, but in neither case should the handline be blamed. In the first, a lineman climbed a pole to do some work on a transformer. Instead of taking the end of a handline with him, he called down to the groundman to throw it up. He stood up on the cover of a transformer with his back to the pole in a favorable position to receive the line, but in attempting to catch it, he straightened up and brought his head into contact with a high potential line. Falling to the ground he was killed.

The other accident in which a handline figured was caused by a thrown line becoming tangled in a high potential circuit. In attempting to shake the line loose, a short circuit burned off one of the line wires. The falling wire struck a lineman working on the pole. He received a shock which caused him to fall, breaking both arms. Neither of these accidents would have happened if the handline had been carried up the pole.

Rubber gloves are usually provided by the company, systematically tested and kept in good repair. Linemen frequently have to be coaxed or threatened by the foreman before they will put them on, and then sometimes they will take them off and tuck them under their belts, just when they need them most. To use rubber gloves as a measure of precaution in the event that the circuit on which they are working accidentally comes into contact with a high potential line, apparently seems to some of them like displaying a weakness, and they would rather take a chance with a high voltage than to run a chance of being "kidded" by the other boys in the gang.

Rubber Gloves Better Than Harp

The lads who are poking fun would make one believe that gloves should be worn with a swagger stick and monocle, but there are different kinds of gloves and different kinds of jobs. Rubber gloves are unwieldy and not exactly pleasant to wear, but at the worst they are much better than a wooden overcoat.

Take this case: After making the claim that he could "eat 220-volt stuff," a lineman climbed up on a steel frame building to cut down a 220-volt service. Standing on the grounded steel work, and without gloves, he cut the line. The moment the jaws of his pliers touched the copper, his grip froze to the handles and he was killed before he could be freed.

There is another reported case where a lineman was badly shocked as he cut into a 110-volt wire while he was standing on a lawn that was wet from sprinkling. In another quite recent fatality, a lineman was killed by 110 volts. He was connecting a three-wire 110/220-volt service on the pole and had the middle or neutral wire under his left arm close up to the shoulder. While tapping the service to the line, he received a 110-volt shock through his pliers, right hand, right arm, and chest, which killed him before he could be released.

Pulling Dead Lines Even Dangerous

Many serious accidents have been reported where men were pulling wires or cables while standing on the ground and the lines came into accidental contact with high potential circuits. This class of accidents has become so frequent and serious with certain companies, that they are contemplating requiring groundmen to use rubber gloves while handling wire or cables which are in any way exposed to accidental contact with live circuits at any voltage.

Once in a great while safety belts break and linemen fall, but more frequently they fall because they are not using the belt. The safety belt is frequently changed from one location to another as a man changes his position on the pole, and here lies the greatest danger. In passing the strap around the pole or over an arm there is often greater liability to come into contact with high potential circuits, and "looking ahead" in this case is important.

I would offer this advice to linemen: Do not do your work automatically or subconsciously. Think as you go and "think safety." This may be illustrated by a story of two men working on an 11 kw. line, painting the cross arms yellow. One was splashing along with his mind miles away, when he unconsciously reached up and hung his paint pail on the 11,000. His partner called his attention to what he had done. He looked at it for a moment and then said: "Well, if I hung it there I guess I can't take it off," and he did.

Do not forget, if you are a lineman, you are a member of a team, just as much as though you were a ball player —with this difference: If you make an error you may not be able to play again tomorrow. In no game is team work required more than in the game of "juggling juice." There is an old saying: "Linemen never grow old," I would qualify that by saying: "Careless linemen never grow old," so "keep your eye on the ball" and don't get too close to the plate.—G. E. Kimball in *Safety News*.

Rules Being Established for Radio Antennas

In the past few years much has been said and written on the subject of the hazards of antennas used in radiophone receiving installations. Many people have sought to convey to the minds of the untechnical the idea that radiophone antennas are invariably a menace, arguing that every wire elevated or suspended in space and connected at one end to the earth is likely sooner or later to be struck by lightning.

To counteract this impression, the radio selling organizations supported a campaign the aim of which was to present to prospective purchasers statistics that would prove the risk to be negligible. Representatives of some of these organizations felt that insurance companies, underwriters committees and inspection bureaus were overestimating the hazard in the interest of bureaucracy and against the interest of the radio equipment companies.

The situation now is clearing as the public learns that the National Electric Code, recognized by fire-insurance companies, specifies methods of wiring, including lightning protection, which should be followed if damage to life and property is to be reduced to a minimum.

Care in Handling Copper

Copper cannot be given the same rough treatment that iron, steel or brass will stand; it requires some important precautions in its handling and application. It fails quickly under localized stresses. Sharp bends, rough or nicked edges in copper straps or wires, limited movement to take care of expansion and contraction, are all points especially to be guarded against. This is particularly true when the copper is subject to quick, sharp blows or vibration, such as are common with locomotive motors.

Problems In Underground Management

Water Cartridge May End Powder Risk And Bring Down Coal in Lumps

Will Not Cause Dust or Gas Explosions, Shatter Roof or Coal Ribs, nor Develop Poisonous Gases—Small Cartridge Only Two Inches in Diameter

MORE than one effort has been made to introduce the hydraulic cartridge into the coal mines, and correspondence recently received shows that it still has many advocates who are anxious to get in touch with the concerns which are making it. The cartridge must stand up, of course, under the severe conditions it has to confront.

It is not easy to shatter coal, rock or concrete and do it by main force without the advantage of impact and have the equipment remain uninjured and ready for continuous work. That B. C. Beachamp, of the Demolition and Construction Co., 72-74 Victoria St., London, S. W.-1, the owner of the Tonge hydraulic mining cartridge says his device will do. Its ability to crack concrete as shown in the illustrations seems to satisfy that point, at least in a degree.

The other difficulty is in the making of the hole for the cartridge. Powder and dynamite go into small holes. The hydraulic cartridges have needed more room. One, at least has required or preferred a slotted hole. This device needs a hole 2 in. or 4 in. in diameter depending on the size of the cartridge. This size is by no means insuperable, the smaller hole being quite of usual dimensions.

The hydraulic mining cartridge consists of a strong steel cylinder or cartridge-shaped body containing a number of small hydraulic rams or presses which work at right angles to the axis of the body. These rams were formerly of duplex or telescopic form, thereby having a longer travel. For practical work the solid ram has proved adequate to all requirements, being also somewhat simpler. The cartridge is used in conjunction with a pneumatic, steam, or electric drill.

A hole of a suitable diameter, slightly larger than that of the particular size of cartridge being used, is drilled to the required depth in the material being broken. The cartridge is inserted in position, and liners, or packing pieces of flat iron bar about $\frac{3}{8}$ in. thick, are placed between the heads of the rams and the concrete circumference of the hole. All is then ready for "firing."

A charge of about a quart of water is required. The tank containing this is connected by a rubber tube to the suction side of the cartridge pump. This pump has two handles, the smaller of which is attached to the pump piston. Operation of this handle in and out alternately draws in water from the suction side and forces it into the cartridge head. An air exhaust valve is left open until the cartridge head, tubing, and pump are full; it is then closed.

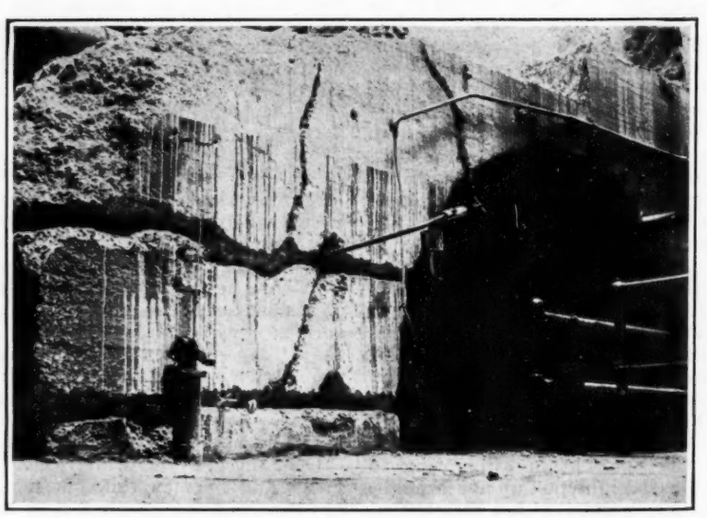
With the apparatus full of water it is now impossible to operate the small handle direct, and the second, and larger one, is brought into use. It consists of a screw device, which as it is tightened up forces water into the cartridge head past a non-return valve. As the operator continues to work the pump, therefore, the pressure behind the rams in the cartridge head gradually "builds up," until finally the material to be broken cracks and then gives way.

The hydraulic pressures usually employed in working the tool are from three to five tons per square inch, although much higher pressure could be used if required. However, as the collective area of the rams multiplied by the hydraulic pressure per square inch indicates a total bursting pressure of from 60 to 240 tons, depending on the size of the machine used, it is clear that no higher operating pressures are needed for all practical purposes. One of the early applications of the machine was the lifting of 200-ton masses of concrete to permit of a chain being passed below them for removal.

The cylindrical head of the cartridge is made of various diameters and lengths, and is provided with five, six, or eight press rams, according to the size of the tool, the larger sizes having the smaller number of rams. For concrete work the 4-in. diameter cartridge has proved most useful. Recently, to meet the requirements of lighter work, a baby cartridge of slightly over 2 in. diameter has been developed.

It is interesting to note that the cartridge was used in raising the two British warships that were sunk during the war in the Zeebrugge Canal to blockade it. By means of the cartridge the concrete with which these ships were filled was easily removed and the hulls were floated.

The hydraulic cartridge was invented by a mining man, Mr. Tonge, for use in the coal mines. Its use for demolishing concrete and rock is a new development, but shows the power with which it can be made to operate. It has the advantage that where it is used explo-

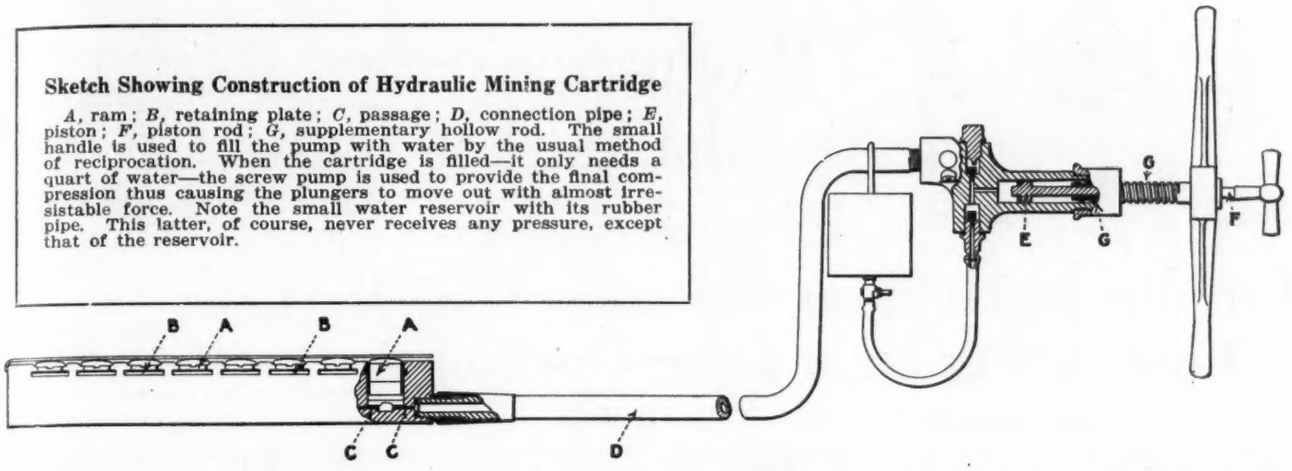


Water Power Applied to the Breaking of Concrete

Hydraulic mining cartridge breaking 50 tons of concrete with a single "shot" at Lots Road Power Station in London, England. The pump by which this was effected is seen near the under side of the arch.

Sketch Showing Construction of Hydraulic Mining Cartridge

A, ram; *B*, retaining plate; *C*, passage; *D*, connection pipe; *E*, piston; *F*, piston rod; *G*, supplementary hollow rod. The small handle is used to fill the pump with water by the usual method of reciprocation. When the cartridge is filled—it only needs a quart of water—the screw pump is used to provide the final compression thus causing the plungers to move out with almost irresistable force. Note the small water reservoir with its rubber pipe. This latter, of course, never receives any pressure, except that of the reservoir.



sives are not needed. This is a distinct gain as it removes the dangerous powder magazine, which has already claimed many lives. It also saves the danger and expense of the powder trip and all the dangers connected with the handling of powder, fuse and detonators at the mine face.

It, further, is safe in a gaseous place. Even permissible explosives are not safe in gas if an overcharge is fired. The possibility of powder being dropped or discharged unburned into the coal is avoided as well as all the dangers of deteriorated explosives. A long train of accidents is thus avoided.

Where the hydraulic cartridge is used no coal-dust explosion can be charged to the breaking of the coal and the quantity of fine dust formed will be decreased, however that is a minor matter as undercutting makes plenty of dust. The coal is not shattered, nor are the adjacent ribs of the roof, making the roadways more permanent and safe and reducing the need for timber. Neither poisonous gases nor smoke are formed. Where ventilation is defective deaths from the first have occurred and the health of the miner has often been affected adversely. The smoke of explosives is particularly undesirable especially during working hours. With the hydraulic cartridge "shooting" can be done at any hour without fear of accident, delay or discomfort. The "shot" is made in about five minutes, and as will be seen the equipment is light. No tests of this cartridge have been made in America but it is being extensively tried we understand in the mines of Great Britain, and it is being used quite generally, we are told, in the urban demolition and construction work in that country. Care, of course, would have to be taken to arrange the cartridge so that it would break the coal down in sufficiently small pieces that the miner would not have to reduce the coal to small sizes in order to load it into the car. Only experience will determine the true value of the water cartridge.

Chunk of Waste Stops an Inaccessible Leak

By E. S. Wade
Superintendent, Beech Bottom Mine Power, W. Va.

In the Beech Bottom mine of the Windsor Power House Coal Co., near Power, W. Va., an extensive sump a short distance from the main headings was drained by a plunger pump. A 3-in. discharge line led from the pump through an airway to a borehole 175 ft. away, which carried the water against a head of 65 ft. to the surface.

The roof in this mine is "rotten," and consequently comes down in large falls, unless it is timbered, properly. The airway mentioned, unfortunately, was not so timbered, with the result that many falls occurred in it. One of these broke the discharge line of the pump. An attempt to locate the break would have been both difficult and dangerous.

What was to be done? Water in the basin rose rapidly and the discharge borehole was no longer available. The shortest distance from the pump to the surface by way of the entries is about 1,200 ft. and at least three days would be required after the pipe was obtained and brought into the mine to lay such a line. I was at a loss to know what to do and asked a representative of a pump manufacturer for his advice.

He suggested that the discharge end of the pump be opened and a piece of waste, the size of one's fist, be placed in the line. His theory was that the waste would follow the path of least resistance. Consequently when it reached a break in the pipe, it would rush into the opening, where it would serve as a plug, held in place by the pressure of the water inside the pipe, which naturally would be many times greater than the atmospheric pressure on the outside.

He was right. I tried his scheme and it worked perfectly. This emergency repair afforded me an opportunity to lay a new permanent discharge line.

Does Oxidation of Pyrite or Of Coal Cause Mine Fires?

Pyrite, says J. Ivon Graham, in a paper read before the South Staffordshire and Warwickshire Institute of Mining Engineers, has been credited for the past three centuries with causing the spontaneous combusion of coal. It is now clear from recent researches that in some cases the oxidation of coal is the cause of spontaneous combustion and that in others the oxidation of pyrite is to be credited as being the cause.

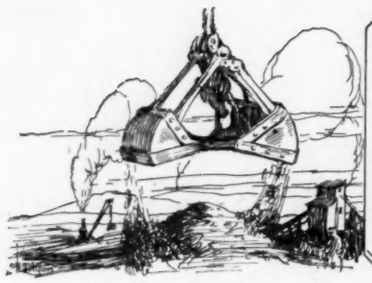
Winmill, says Mr. Graham, has indicated that the pyrite of North Staffordshire which oxidizes rapidly is found in a finely divided state and that the lump pyrite in the Barnsley bed that remains untarnished for years, when crushed to a fine powder oxidizes rapidly at (86 deg. F.), in fact as rapidly as the North Staffordshire material, whereas particles that will be retained on a 30-mesh screen and pass through a 10-mesh show only a slight absorption of oxygen.

Winmill has shown that twice as much heat is evolved in the oxidation of pyrite as is generated in the oxidation of coal when an equal quantity of oxygen is absorbed. Further Winmill's tests show that the rate of oxidation of pyrite is doubled for a rise of 10 deg. C. or 18 deg. F., an acceleration in the rate of heating of pyrite in excess of that resulting with the oxidation of coal.

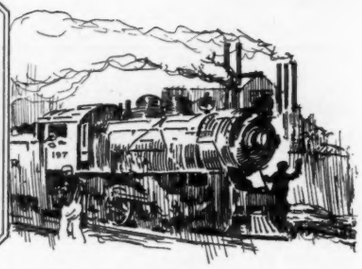
Some pyrite from the Ballachulish state quarries which showed no evidence of tarnishing rapidly oxidized when broken up into small sizes. Massive pyrite from Cornwall and radiated pyrite (marcasite) from the chalk at Folkstone showed a similar action. Hence it seems obvious that pyrite when broken fine is readily susceptible to oxidation.

Reducing Resistance of Air To Cage Movement

General recognition has been given to the fact that the movement of cages interferes with the passage of air in the shaft. It also adds to the work of the hoist. Recently experiments have been made showing that mine cages when traveling at the maximum speed increase the static strain on the rope 8 to 21 per cent. This lowers the actual margin of safety from 10 to 7 and a writer in *Braunkohle* advises that air resistance be reduced as shown in the illustration especially for deep shafts and high hoisting speeds.



Production And the Market



Unrelieved Dullness Pervades Coal Markets; Contracting Lags; Lake Opening Lacks Promise

The coal consumer's little game of "wait and see" is being carried to such lengths that stagnation prevails in the coal markets of the country. Everyone continues to hold back to see what will happen, but nothing happens. Even the closing of contracts which ought to be in evidence at this time is conspicuously backward, and that despite the low levels that prices have reached. Running time at commercial mines has dropped to three days a week or less in most fields, southern Ohio working at less than 20 per cent of capacity. In the Standard field and in eastern Kentucky many mines have closed down, and many others are soon to follow suit, as a strike is expected in the latter field April 1. An indefinite suspension is looked for also in the Southwest pending the negotiation of a wage agreement. Central Pennsylvania and northern West Virginia have ironed out their differences, the existing agreement having been reaffirmed in each case, with minor modifications. An open-shop pact has been signed for four years between the union and the Kentucky-Tennessee operators' association.

Preparations for the opening of the navigation season on the Lakes lack the usual hopeful anticipation. With about 3,500,000 tons of coal on the docks at the Head-of-the-Lakes March 15, compared with 900,000 tons at that time a year ago, there is likely to be an oversupply when navigation opens. As a consequence a considerable falling off in early lake traffic as compared with last year is more than probable.

Midwest Markets Stagnant

Coal Age Index declined 3 points to 173, as of March 31, the corresponding average price being $2.09. This compares with $2.13 on March 24.

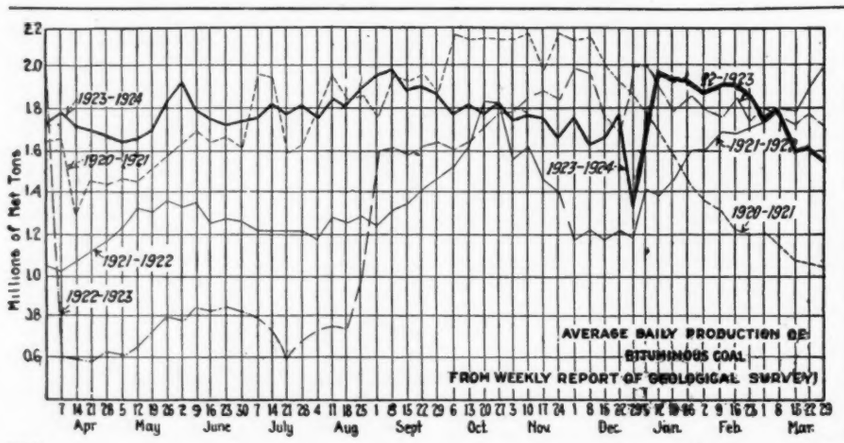
A slight firming up of steam coals is the only feature that has tended to relieve, in a measure, the deadly dullness that has settled over Midwestern markets. Though a number of screening contracts expired April 1, very little contracting is going on, consumers still having supplies sufficient to last several weeks longer. Running time at commercial mines averages about 2½ days a week.

Kentucky markets have developed further weakness, due to mild weather and lack of orders from retailers, and more wage cutting is reported in the non-union districts of eastern Kentucky. Eight thousand idle empty coal cars on sidings in the Cincinnati district bear eloquent testimony to the dullness of the market thereabouts. There was a spurt of activity in the Southwestern district, featured by heavy buying on the part of railroads and industries, due to the expected shutdown during the wage parley. The Colorado market was reasonably active, thanks to some cold weather, but the reverse is true of Utah, where the mines are working less than two days a week on an average.

Sluggishness All Too Evident

Sluggishness characterizes the trade in Ohio, and there is no evidence of preparations for rush of early cargoes up the lakes such as was the case last year, when the docks were cleaned up. Pittsburgh is finding it difficult to meet competition from some of the West Virginia and Kentucky fields, which are able to quote lower prices due to wage cuts. Trade in New England and on the Atlantic seaboard remains dormant.

Production of bituminous coal during the week ended March 22 amounted to 9,309,000 tons, according to the report of the Geological Survey, which was 318,000 tons less than was produced during the previous week. Output of anthracite totaled 1,804,000 tons, a decline of 137,000 tons compared with the preceding week, when 1,941,000 tons was mined.



Estimates of Production

(Net Tons)

BITUMINOUS

Week ended	1922–1923	1923–1924
March 8	10,628,000	9,617,000
March 15 (a)	10,428,000	9,627,000
March 22 (b)	10,424,000	9,309,000
Daily average	1,737,000	1,552,000
Coal year to date	417,168,000	532,016,000
Daily average to date	1,389,000	1,780,000

ANTHRACITE

March 8	2,049,000	1,882,000
March 15	2,057,000	1,941,000
March 22	2,126,000	1,804,000
Coal year to date	54,478,000	91,118,000

COKE

March 15 (a)	410,000	308,000
March 22 (b)	384,000	316,000
Calendar year to date	4,270,000	3,367,000

(a) Revised from last report. (b) Subject to revision.

Midwest Dullness Continues

There was little to relieve the chronic dullness in Midwestern markets during the past week even though steam coals firmed up a trifle. An effort to force screenings business was made by jacking the price of southern Illinois 1¼-in. stuff to $2, and 2-in. coal to $2.15, but even this did not drive much business into the open. A good many screenings contracts ran to April 1 and the holders of some of these agreements have more fine coal on the ground, which evidently is going to carry them several weeks further. By May 1 a real stiffening of fine-coal prices is expected.

The prospective shutdown in the Southwestern region beginning April 1 last week was looked upon by Illinois producers as a source of some business in Missouri, Kansas and Nebraska. This argument was worked to the full on steam purchasers, who insist upon making no contracts now but who say they will be ready to do so in a month or six weeks. Very little contracting is now going on.

Domestic business is slow indeed throughout the Midwest region. Fag-end business is all there is at retail yards, especially after a period of fine balmy weather opened during the latter part of last week. Many mines closed down in southern Illinois, as well as in the rest of Illinois and Indiana on April 1. Running time at the average commercial mine has not exceeded 2½ days a week.

Mines in the Mt. Olive district are carrying a large number of "no bills" in prepared sizes, which is the result of a small demand for domestic tonnage by reason of the prevailing mild weather. Two and one-half inch and 3-in. lump is being quoted in the St. Louis market at $3 per ton mine, while prices in the surrounding territory outside of East St. Louis and St. Louis switching districts are 25c. per ton lower, or $2.75 per ton. Domestic egg and domestic nut are difficult to move at any price.

In the Standard field the only size finding a ready market is screenings, which are quoted at $1.10@$1.30. A number of mines already have suspended operations and others are contemplating doing so on April 1. Those in operation are fortunate in getting two days per week working time.

St. Louis Trade Is Duller

Mild weather has caused a decline in retail interests, resulting in a decidedly inactive market. Dealers are reducing their stocks to a minimum, anticipating lower prices April 1. The country demand is largely for cheaper grade

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Apr. 2 1923	Mar. 17 1924	Mar. 24 1924	Mar. 31 1924†
Smokeless lump	Columbus	$6.85	$3.85	$3.60	*$3.15@$3.40*
Smokeless mine run	Columbus	4.25	2.10	2.10	2.00@ 2.25
Smokeless screenings	Columbus	4.25	1.55	1.60	1.50@ 1.75
Smokeless lump	Chicago	6.10	3.60	3.25	3.00@ 3.50
Smokeless mine run	Chicago	3.75	2.20	2.10	2.00@ 2.25
Smokeless lump	Cincinnati	6.25	3.25	3.25	3.00@ 3.50
Smokeless mine run	Cincinnati	4.00	2.25	2.20	*2.00@ 2.25*
Smokeless screenings	Cincinnati	3.85	1.75	1.75	**1.65@ 2.00**
*Smokeless mine run	Boston	6.10	4.65	4.65	*4.15@ 4.25*
Clearfield mine run	Boston	3.05	2.10	2.05	*1.65@ 2.35*
Cambria mine run	Boston	3.85	2.60	2.60	*2.10@ 3.00*
Somerset mine run	Boston	3.50	2.35	2.30	*1.75@ 2.50*
Pool 1 (Navy Standard)	New York	4.10	3.00	3.00	2.75@ 3.25
Pool 1 (Navy Standard)	Philadelphia	4.30	3.00	3.00	2.75@ 3.25
Pool 1 (Navy Standard)	Baltimore	.....	.....	.....	.....
Pool 9 (Super. Low Vol.)	New York	3.50	2.20	2.20	2.00@ 2.40
Pool 9 (Super. Low Vol.)	Philadelphia	3.50	2.30	2.30	*2.00@ 2.45*
Pool 9 (Super. Low Vol.)	Baltimore	3.50	2.30	2.25	2.00@ 2.50
Pool 10 (H.Gr.LowVol.)	New York	2.90	1.95	1.95	*1.75@ 2.00*
Pool 10 (H.Gr.Low Vol.)	Philadelphia	3.00	1.85	1.85	1.70@ 2.00
Pool 10 (H.Gr. Low Vol.)	Baltimore	3.25	1.90	1.90	1.85@ 2.00
Pool 11 (Low Vol.)	New York	2.50	1.40	1.40	1.25@ 1.60
Pool 11 (Low Vol.)	Philadelphia	2.50	1.65	1.65	*1.30@ 1.70*
Pool 11 (Low Vol.)	Baltimore	2.35	1.75	1.60	1.50@ 1.70
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	2.40	1.50	1.50	1.40@ 1.65
Pool 54-64 (Gas and St.)	Philadelphia	2.30	1.60	1.60	*1.45@ 1.70*
Pool 54-64 (Gas and St.)	Baltimore	2.40	1.85	1.70	1.55@ 1.90
Pittsburgh sc'd gas	Pittsburgh	3.35	2.55	2.55	2.50@ 2.65
Pittsburgh gas mine run	Pittsburgh	.....	2.30	2.30	2.25@ 2.35
Pittsburgh mine run (St.)	Pittsburgh	2.00	2.10	2.10	2.00@ 2.25
Pittsburgh slack (Gas)	Pittsburgh	2.25	1.45	1.35	*1.20@ 1.30*
Kanawha lump	Columbus	4.25	2.55	2.55	2.40@ 2.70
Kanawha mine run	Columbus	2.75	1.50	1.55	1.45@ 1.70
Kanawha screenings	Columbus	2.30	1.05	1.05	1.00@ 1.10
W. Va. lump	Cincinnati	3.50	2.85	2.50	*2.00@ 2.50*
W. Va. gas mine run	Cincinnati	2.75	1.40	1.30	*1.25@ 1.35*
W. Va. steam mine run	Cincinnati	2.50	1.40	1.30	*1.25@ 1.35*
W. Va. screenings	Cincinnati	2.10	.85	.85	**.75@ 1.00**
Hocking lump	Columbus	3.50	2.55	2.55	2.40@ 2.70
Hocking mine run	Columbus	2.35	1.85	1.70	1.60@ 1.75
Hocking screenings	Columbus	1.90	1.05	1.05	1.00@ 1.10
Pitts. No. 8 lump	Cleveland	2.90	2.30	2.35	2.00@ 2.75
Pitts. No. 8 mine run	Cleveland	2.25	1.80	1.80	1.75@ 1.90
Pitts. No. 8 screenings	Cleveland	2.00	1.30	1.25	*1.10@ 1.30*

Midwest	Market Quoted	Apr. 2 1923	Mar. 17 1924	Mar. 24 1924	Mar. 31 1924†
Franklin, Ill. lump	Chicago	$3.85	$2.85	$2.85	$2.75@$3.00
Franklin, Ill. mine run	Chicago	3.10	2.35	2.35	2.25@ 2.50
Franklin, Ill. screenings	Chicago	2.05	2.00	1.80	**2.00@ 2.15**
Central, Ill. lump	Chicago	3.10	2.60	2.60	2.50@ 2.75
Central, Ill. mine run	Chicago	2.60	2.10	2.10	2.00@ 2.25
Central, Ill. screenings	Chicago	1.60	1.70	1.55	**1.60@ 1.75**
Ind. 4th Vein lump	Chicago	3.35	2.85	2.85	2.75@ 3.00
Ind. 4th Vein mine run	Chicago	2.85	2.35	2.35	2.25@ 2.50
Ind. 4th Vein screenings	Chicago	1.85	1.85	1.85	**1.80@ 2.00**
Ind. 5th Vein lump	Chicago	2.85	2.60	2.60	2.50@ 2.75
Ind. 5th Vein mine run	Chicago	2.10	2.10	2.10	2.00@ 2.25
Ind. 5th Vein screenings	Chicago	1.55	1.70	1.60	**1.60@ 1.75**
Mt. Olive lump	St. Louis	.....	2.85	2.85	2.75@ 3.00
Mt. Olive mine run	St. Louis	.....	2.50	2.50	2.50
Mt. Olive screenings	St. Louis	.....	1.55	1.50	1.50
Standard lump	St. Louis	2.60	2.70	2.30	**2.25@ 2.50**
Standard mine run	St. Louis	2.10	1.95	1.95	1.90@ 2.00
Standard screenings	St. Louis	.95	1.30	1.30	*1.10@ 1.30*
West Ky. lump	Louisville	2.50	2.85	2.85	*2.75*
West Ky. mine run	Louisville	1.85	1.70	1.60	1.40@ 1.85
West Ky. screenings	Louisville	1.75	1.30	1.30	*.90@ 1.15*
West Ky. lump	Chicago	2.85	2.60	2.60	2.50@ 2.75
West Ky. mine run	Chicago	1.80	1.35	1.20	*1.00@ 1.25*
South and Southwest					
Big Seam lump	Birmingham	2.50	2.60	2.60	2.50@ 2.75
Big Seam mine run	Birmingham	2.10	1.80	2.00	1.75@ 2.25
Big Seam (washed)	Birmingham	2.35	2.10	2.20	2.00@ 2.40
S. E. Ky. lump	Chicago	3.85	2.85	2.85	*2.50@ 2.75*
S. E. Ky. mine run	Chicago	2.85	1.85	1.60	1.40@ 1.85
S. E. Ky. lump	Louisville	4.25	3.00	3.00	2.75@ 3.25
S. E. Ky. mine run	Louisville	2.85	1.75	1.70	1.40@ 2.00
S. E. Ky. screenings	Louisville	2.40	.95	.95	.75@ 1.15
S. E. Ky. lump	Cincinnati	3.75	2.85	2.85	*2.00@ 2.25*
S. E. Ky. mine run	Cincinnati	2.60	1.45	1.45	*1.25@ 1.50*
S. E. Ky. screenings	Cincinnati	2.10	.85	.85	**.75@ 1.00**
Kansas lump	Kansas City	4.50	4.50	4.50	4.50
Kansas mine run	Kansas City	3.50	3.25	3.25	3.25
Kansas screenings	Kansas City	2.60	2.50	2.50	2.50

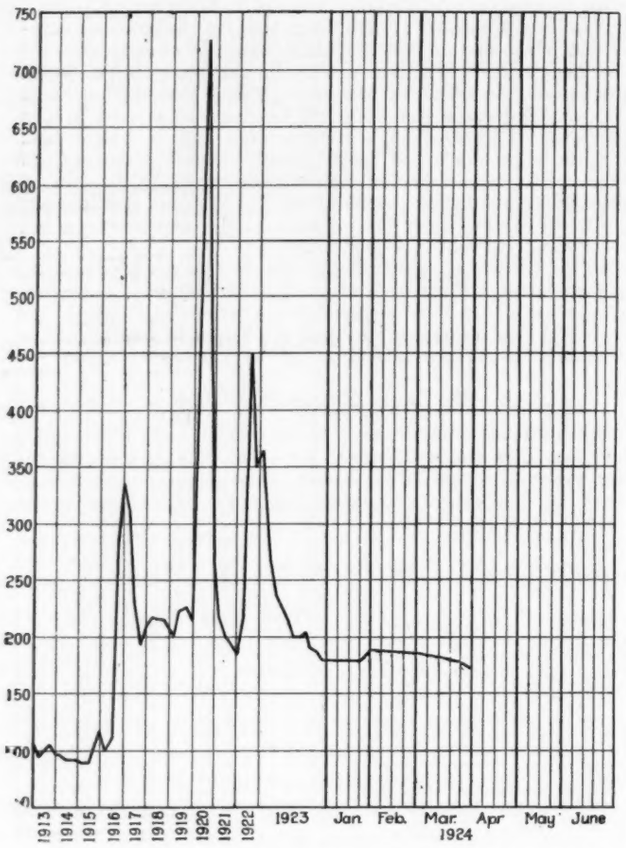
* Gross tons, f.o.b. vessel, Hampton Roads.

† Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	April 2, 1923 Independent	April 2, 1923 Company	March 24, 1924 Independent	March 24, 1924 Company	March 31, 1924† Independent	March 31, 1924† Company
Broken	New York	$2.34	$9.00	$7.75@$8.35	.....	$8.00@$9.25	.....	$8.00@$9.25
Broken	Philadelphia	2.39	.....	7.90@ 8.10	.....	.....	.....	.....
Egg	New York	2.34	8.25@11.00	8.00@ 8.35	$7.75@$8.25	8.75@ 9.25	$7.75@$8.25	*8.25@ 9.25*
Egg	Philadelphia	2.39	9.25@11.00	8.10@ 8.35	8.50@10.00	8.75@ 9.25	8.50@10.00	8.75@ 9.25
Egg	Chicago*	5.06	12.00@12.50	7.20@ 8.25	7.50@ 8.80	8.00@ 8.35	7.50@ 8.80	8.00@ 8.35
Stove	New York	2.34	8.25@11.00	8.00@ 8.35	8.75@ 9.25	8.75@ 9.25	8.75@ 9.25	*8.25@ 9.25*
Stove	Philadelphia	2.39	9.25@11.00	8.15@ 8.35	9.85@11.00	8.90@ 9.25	9.85@11.00	8.90@ 9.25
Stove	Chicago*	5.06	12.00@12.50	7.35@ 8.25	7.95@ 9.25	8.00@ 8.35	7.95@ 9.25	8.00@ 8.35
Chestnut	New York	2.34	8.25@11.00	8.00@ 8.35	8.75@ 9.25	8.75@ 9.25	8.75@ 9.25	*8.25@ 9.25*
Chestnut	Philadelphia	2.39	9.25@11.00	8.15@ 8.35	9.85@11.00	8.90@ 9.25	9.85@11.00	8.90@ 9.25
Chestnut	Chicago*	5.06	12.00@12.50	7.35@ 8.35	7.95@ 9.25	8.00@ 8.35	7.95@ 9.25	8.00@ 8.35
Range	New York	2.34	.....	8.30	.....	9.00	.....	9.00
Pea	New York	2.22	6.30@ 8.50	6.00@ 6.30	4.50@ 5.25	6.15@ 6.65	4.50@ 5.25	5.75@ 6.65
Pea	Philadelphia	2.14	7.00@ 9.00	6.15@ 6.20	4.75@ 6.50	6.35@ 6.60	4.75@ 6.50	6.35@ 6.60
Pea	Chicago*	4.79	7.00@ 8.00	5.49@ 6.03	4.50@ 5.60	5.40@ 6.05	4.50@ 5.60	5.40@ 6.05
Buckwheat No. 1	New York	2.22	3.00@ 4.00	3.50@ 4.15	2.25@ 3.00	3.50	*2.25@ 2.75*	*3.00@ 3.50*
Buckwheat No. 1	Philadelphia	2.14	4.00@ 5.00	4.00	2.25@ 3.00	3.50	2.25@ 3.00	3.50
Rice	New York	2.22	2.25@ 2.75	2.50	1.75@ 2.25	2.50	1.75@ 2.25	*2.00@ 2.50*
Rice	Philadelphia	2.14	2.75@ 3.00	2.75@ 3.00	1.75@ 2.25	2.50	1.75@ 2.25	2.50
Barley	New York	2.22	1.25@ 1.75	1.50	1.50@ 1.75	1.50	1.50@ 1.75	1.50
Barley	Philadelphia	2.14	1.40@ 2.00	2.00	1.25@ 1.50	1.50	1.25@ 1.50	1.50
Birdseye	New York	2.22	.....	1.60	1.60@ 1.75	1.60	1.60@ 1.75	1.60

* Net tons, f.o.b. mines. † Advances over previous week shown in **heavy type**, declines in *italics*.



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1924			1923
	March 31	March 24	March 17	April 2
Index	173	176	179	252
Weighted average price	$2.09	$2.13	$2.16	$3.07

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

coals, but only a small tonnage is moving, the country dealer taking the same view as the city dealer. There is some interest being taken in anthracite, but orders are withheld awaiting the new circular.

Kentucky Market Soft

Milder weather and lack of retailer orders has further weakened the Kentucky coal market, until $2.75 is the top price quoted on the best spot coal in the state, while there has been some distress stuff selling at ridiculously low prices. Eastern Kentucky mines in the non-union districts are reported to have done some more wage cutting, which is causing much dissatisfaction among miners, but it is a case of lower production cost or close down.

Revised prices of eastern Kentucky coal show block at $2.50@$2.75; lump, $2.25@$2.50; egg or nut, $1.75@$2; mine run, $1.25@1.75; and screenings, 75c.@$1.15, while western Kentucky is asking $2.75 for 6-in. block; $2.40@$2.50 for egg or lump; $1.75@$2.15 for nut; $1.40@$1.85 for mine run, and 90c.@$1.25 for screenings.

Western Kentucky has no business to speak of and many mines are closing, even though a strike was expected in most of the field April 1. Operators report that a good many mines are down and that others are working a day to a day and a half a week, the few that are working two days being considered as "sitting pretty."

Northwest Trade Is Dead

Dock conditions at the Head-of-the-Lakes are bad. Stocks on docks March 15 are placed at 3,500,000 tons, of which approximately 1,500,000 is free coal. Very little has gone out in the past six weeks, and at present it looks as if there would be an oversupply when navigation opens. This time last year the docks held only about 900,000 tons. The railroads are taking what coal they can. The docks would be working only two or three days a week if it were not for them.

Prices of bituminous are the same as last week, although the market is weaker and reductions are likely. Dock companies at Duluth have word not to cut, as any one of a dozen possibilities might help the market.

A cut of $1 in anthracite pea coal has been announced. The remainder of the anthracite market is firm. This cut is because of oversupply and makes the dock price $10. Little anthracite is in demand. Nut is cleaned up, but a small amount of stove seems to bob up every now and then. Buckwheat and Pocahontas are both at a standstill. Anthracite substitutes are dead. Briquets can be had at $10, and coke at $9.50 to $10.50, depending on size.

The coal market is in a state of stagnation at Milwaukee also. Little or nothing is doing. Demand is only for fuel for immediate use. The weather continues mild. Representatives of dock companies are in the East consulting the powers that be as to future supplies and also as to the extent of the spring cut in prices, which is expected to be promulgated about the beginning of April.

Southwest Shutdown Coming

The last week of March was an active one through the Southwestern district. The prospect of Kansas, Oklahoma, Missouri and Arkansas mines being closed indefinitely pending a wage agreement by the operators' and miners' scale committees, which opened a joint meeting in Kansas City March 28, brought heavy buying by railroads and larger industries of industrial sizes. The slight surplus of lump and nut accumulated as a result of the increased demand for screenings is causing little worry. It is expected to be cleaned up before long. Mines have been working full time. Kansas prices are unchanged.

The market in Colorado continued reasonably active last week, due to the cold weather. Dealers are fairly well loaded up with small orders on the cheaper grades. Higher grades and anthracite are not popular and a number of unbilled loads of all kinds are reported at the mines. Colorado mines worked an average of twenty-four hours last week. There has been no change in prices since March 1.

The market in Utah continues sluggish in spite of a short cold snap which moved a little retail coal. Mines are working less than two days a week on an average. The demand, such as it is, is for slack, which is hard to get on account of the short working time. No bill cars are on the tracks and operators are doing their best to keep the mines open.

Cincinnati Market Panicky

April 1 prices perhaps are the most interesting of the year's quotations in Cincinnati, as they throw a light for several months to come. During the past week the Louisville & Nashville contracts were let, and those of the Big Four, Norfolk & Western and Chesapeake & Ohio are being parceled out, indications showing that as the really large tonnage is concerned a $2 basis, or close to it tells the tale. Smokeless circular prices name $3.50 for lump and egg, $2.50 for nut, $2.25 for mine run and $2 for screenings. Unlike other seasons this represents the figures of the producers. Off grades are being sold below the market, however, and some mine run is being sold with a guarantee that it will contain 50 per cent of the lump and egg. The state of trade is panicky and inclined to be twisted this way or that with the slightest influence. Forty per cent of the mines in Hazard, Harlan, Elkhorn, Big Sandy and in some of the C. & O. fields are down. Still the production, according to interchange figures, continues on the high ratio marked up in the past few weeks. Specialized coals are quoted as follows: Lump, $3@$3.50; egg, $2@$2.75.

All branches of the Columbus coal trade continue to be quiet, producers as well as jobbers playing a waiting game. Large consumers apparently are waiting until railroad fuel contracts are awarded before coming in, as the prices quoted in the railroad contracts probably will control in commercial business. Quite a few roads have asked for bids and something in that line may be expected

soon. Domestic trade is extremely quiet and retailers are buying only an occasional car to piece through. Slack is weak, owing to the falling off in demand from public utilities. Many Ohio mines are being closed down and output is at a very low point.

As the coal year nears its close, the market situation at Cleveland seems to grow correspondingly worse. Operators and jobbers say that inquiries continue noticeably absent and the market exceedingly dull. It is said that the railroads throughout this section have on hand at least 100 days' storage, and consequently some contracts will not be renewed coincident with their expiration March 31. No contracting of any magnitude is taking place, and it will be an open market proposition pretty generally for a time. The eastern Ohio field as a whole is working less than 50 per cent of full time, and is showing a decline each week. A large number of cargoes are afloat at the lower Lake docks ready to go forward at the opening of navigation.

Production in the Pittsburgh district has been dropping rapidly, chiefly on account of the disappearance of domestic coal. Spot market prices are unchanged except for further declines in slack. It looks as if little contracting will be done, except in special grades of gas coal, consumers preferring to buy from month to month.

Sunny weather at Buffalo has prevented any spurt in the coal trade. As the season is now far advanced the possibility of a weather market seems to be past.

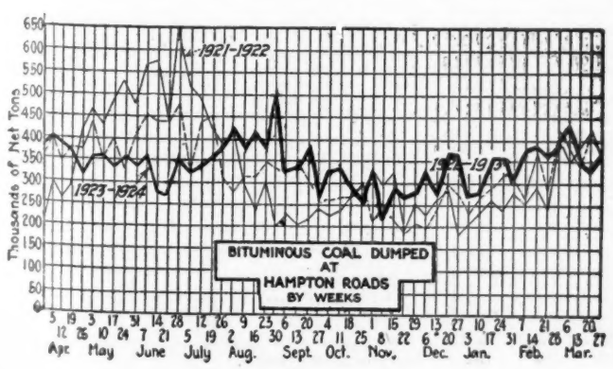
New England Markets Pessimistic

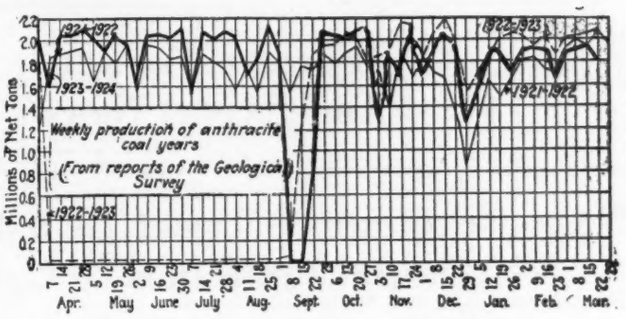
In New England the steam coal market has suffered further reverses. Not only is there an absence of any but scattering spot purchases but prices have declined in pronounced fashion on certain of the high grades. This is the case to a limited extent with quality coals from central Pennsylvania, but most notable are the successive slumps in the figures quoted on Pocahontas and New River both f.o.b. vessel at Hampton Roads and at this end on the dock for inland delivery. Through the trade there is a note of pessimism, and buyers can hardly be relied upon to show much interest in futures under the heavy conditions that now prevail.

For some reason a large share of the smokeless output a fortnight ago was pointed to tidewater, due doubtless to slackening conditions in the West, and large accumulations have been the result. A week ago it was stated that nearly 400,000 tons of Navy Standard coal was either at or en route to the piers, and prices have softened correspondingly. Coal that ten days ago was being held at $4.50@$4.65 has sold down to $4.25, and in a few instances there have been distress lots disposed of at levels materially lower.

In sympathy with market conditions at Hampton Roads, there has been a similar scaling down of quotations on cars Boston. A few leading factors have run spot coal down to $5.50 per gross ton, or within easy range of the lowest level last season. Somewhat earlier there were competitive bids from $6.10 to $6.30 for Pool 1 grades for delivery through a 12-month period, but already these figures are being discounted and further depression in values can only be conjectured.

All-rail and via the Philadelphia and New York piers there is very little steam coal being dumped, output from central Pennsylvania being hopelessly outclassed by Hampton Roads coals on the current price basis, except within restricted areas.





Seaboard Consumers Out of Market

Buying of soft coal at New York is practically at a standstill. Reserves are such that consumers are not purchasing and there are many mines which it is believed, will be closed soon after the beginning of the new coal year. Contract making is slow and many consumers have not renewed their old contracts nor made new agreements for the coming twelve months. As a rule renewals have been on a lower basis and with the Jacksonville agreement ratified by the miners it is expected that consumers who have no contracts will continue to buy in the open market. Further weakening of the market is indicated in the purchase last week by the U. S. Shipping Board of 1,500 gross tons of soft coal equal to either Pool 71 or Pool 9 at $4.48 alongside vessel, New York, as compared with $4.84 for the last previous purchase. This is on a basis of about $1.80 net ton f.o.b. mine.

The wage scale conference of central Pennsylvania operators and miners has had no effect on the market at Philadelphia, as it was known that the non-union production is more than enough to take care of all current needs. In addition stockpiles are so large that the market would not miss the union tonnage for a long while to come. Producers are after contract tonnage, offering attractive figures on contracts to run from one to three years. Inquiries have dropped to almost nothing.

There is not much of encouragement in the soft-coal trade at Baltimore at present except an increasing export movement. Industrials are buying in small quantities only for the major part, and the usual flood of contract inquiries at this time of the year is largely lacking. Prices remain low.

Anthracite Business Flat

Reductions of 50c. per ton on the various sizes of hard coal with the exception of broken and barley were announced by two of the large producing companies on March 29, making the prices of these companies for egg, stove and chestnut sizes $8.25, for pea coal $5.75, and for No. 1 buckwheat and rice $3 and $2 respectively. It was expected that the other companies would announce their schedules for April 1 early this week, and that similar reductions would be made. Buying at New York was practically at a standstill except as to current needs. Coal moved so slowly from the terminals that some of the companies loaded boats to await orders for delivery after April 1, while some retailers, anticipating lower prices, had already advertised a cut in their delivery costs. Independent operators are for the most part quoting company circular or lower in order to move their prepared coals, with the average sales being made at below company prices. Pea coal moves slowly, but the steam coals are in fair shape, with barley leading in demand. Philadelphia reports trade as quiet, if not flat. The consumer is waiting for lower prices and is buying very lightly on that account. Retail yards are well filled, with probably more of pea than anything else. It now looks as if the April price for family coal will be $14.75 for the large sizes and $11 or $10.50 for pea.

Car Loadings, Surplusages and Shortages

	Cars Loaded—All Cars	Cars Loaded—Coal Cars
Week ended March 15, 1924	916,953	170,554
Previous week	929,505	169,807
Same week in 1923	904,116	183,377

	Surplus Cars—All Cars	Surplus Cars—Coal Cars	Car Shortage	
March 14, 1924	175,002	88,479	604	.....
Previous week	144,426	64,115	2,001	.....
Same date in 1923	12,461	3,897	74,442	30,405

Foreign Market And Export News

Wage Negotiations Upset British Market; Output Continues to Gain

Business and prices in the Welsh coal market are inclined to be erratic on account of the unsettled labor position and the scarcity of tonnage. The south Wales situation is very strong and the majority of the collieries declare that they cannot accept further orders for delivery before Easter.

European business shows no indication of improving at the present and it is reported that much business is being lost to Germany. The violent fluctuations of the franc are further complicating deals between French buyers and British sellers. The entire field is disturbed by the negotiations proceeding between the unions and the operators.

Much the same conditions prevail in the Newcastle market, where tonnage is exceedingly short and many collieries are forced to make concessions to effect immediate clearances. The European business has fallen off considerably. The Swedish State Rys. are in the market for 70,000 tons best steams for April-June shipment, and one of the French railways is asking for 20,000 tons of coking coals for April-June shipment.

Production by the British collieries for the week ended March 15, a cable dispatch to *Coal Age* states, was 5,778,000 tons, according to the official reports. This compares with 5,742,000 in the week ended March 8.

Industrial and Household Coals Active in French Markets

French collieries are booked beyond capacity for industrial fuels and the demand for house coal continues active. A shortage of trucks has impeded coal traffic lately, this being due partly to the intensive use of trucks in the Sarre and Ruhr mines for conveying coal toward the inland area districts.

Imports of British coal have been rather small of late, prices remaining firm at the shipping docks. With the pound at 115, selling prices are unusually high.

Importers and briquet makers situated along the coast have asked the government for equal treatment in the matter of reparation and Sarre coals in order to make up for the absence of British coals, on which prices are prohibitive. The government having given instructions that Ruhr coal be transported by sea and that Sarre coal be conveyed through France, importers and briquet makers of the littoral want a hand in selling reparation coal rather than leave it to Strassburg merchants, for instance.

In Belgium, the price for Ruhr metallurgical coke has just been fixed at 170 francs per ton (raised by 5 francs) dating March 1 (or about 149 francs in French currency).

United States Domestic Coal Exports During February

(In Gross Tons)

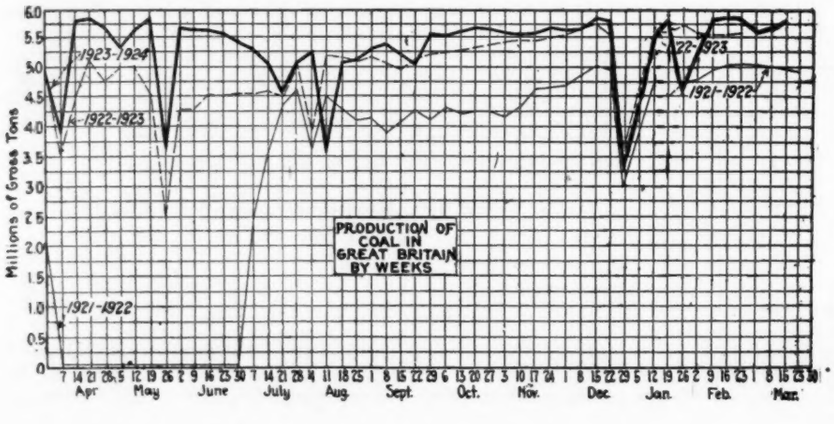
	1923	1924
Anthracite	330,351	309,510
Value	$3,693,512	$3,445,150
Bituminous	805,973	1,262,838
Value	$5,250,678	$6,509,723
Coke	70,989	55,762
Value	$855,679	$512,358
Exported to:		
France	.....	58,928
Italy	9,353	58,407
Other Europe	.....	23,985
Canada	730,112	944,016
Mexico	4,301	5,213
Br. West Indies	3,185	21,260
Cuba	55,511	38,288
Other W. Indies	209	15,301
Argentina	.....	23,700
Brazil	.....	38,568
Chile	.....	9,142
Egypt	.....	7,220
French Africa	.....	8,071
Other countries	3,302	10,739

Hampton Roads Market Dull and Weak; Outlook Bright

Business is dull on the spot at Hampton Roads, with many old orders being filled and old contracts being worked out in advance of the new contract period, April 1. The price of coal is weak and little new buying is reported.

Coastwise and overseas movement, which had been hampered by storms that held up shipping, is again gaining ground. South America has been getting a number of substantial shipments, but mostly on old contracts.

The tone of the market is weak, but the outlook for better business is still bright, shippers expecting little activity in the spot market until after April 1.



Export Clearances Week Ended March 29, 1924

FROM BALTIMORE

	Tons
For Italy	
Czechoslovakian Str. Ligie	6,829
For Porto Rico	
Am. Str. Delisle	477

FROM HAMPTON ROADS

For Argentina	
Nor. Str. Bjornstjerne, for Buenos Aires	7,239
For Brazil	
Br. Str. Lindenhall, for Rio De Janeiro	5,414
For Canada	
Br. Str. Jenkri for Seccond	1,556
Nor. Str. Dagali for St. Georges	2,584
For Cuba	
Dan. Str. Arnold Maersk for Cienfuegos	1,632
For France	
Fr. Str. Mechanic Principal Carvin for Rouen	5,812
For Mexico	
Br. Str. Sunpath for Vera Cruz	3,498
For Newfoundland	
Br. Str. Airsdale for Port aux Basques	4,408
For Peru	
Peruv. Str. Perene, for Callao	2,065
For West Indies	
Nor. Str. Wascana for St. Thomas	7,513
Nor. Str. Samnanger for Fort de France	6,378

Hampton Roads Pier Situation

	March 20	March 27
N. & W. piers, Lamberts Pt.:		
Cars on hand	2,601	2,618
Tons on hand	153,717	164,269
Tons dumped for week	152,104	141,821
Tonnage waiting	12,000	20,000
Virginian Piers, Sewalls Pt.:		
Cars on hand	2,016	1,807
Tons on hand	138,200	122,750
Tons dumped for week	63,353	117,707
Tonnage waiting	10,791	208
C. & O. Piers, Newport News:		
Cars on hand	2,346	2,224
Tons on hand	117,685	111,870
Tons dumped for week	88,867	74,788
Tonnage waiting	1,000	4,150

Pier and Bunker Prices, Gross Tons

PIERS

	March 22	March 29†
Pool 9, New York	$4.75@$5.25	*$4.75@$5.00*
Pool 10, New York	4.60@ 5.00	*4.50@ 4.75*
Pool 11, New York	4.50@ 4.75	*4.25@ 4.50*
Pool 9, Philadelphia	4.90@ 5.20	*4.80@ 5.20*
Pool 10, Philadelphia	4.50@ 4.90	**4.55@ 4.90**
Pool 11, Philadelphia	4.25@ 4.60	**4.35@ 4.65**
Pool 1, Hamp. Roads	4.50	*4.40*
Pool 2, Hamp. Roads	4.25	*4.20*
Pools 5-6-7 Hamp. Rds.	4.10@ 4.15	*4.10*

BUNKERS

Pool 9, New York	5.05@ 5.55	*5.05@ 5.30*
Pool 10, New York	4.90@ 5.30	*4.80@ 5.05*
Pool 11, New York	4.80@ 5.05	*4.55@ 4.80*
Pool 9, Philadelphia	5.15@ 5.55	*5.10@ 5.55*
Pool 10, Philadelphia	4.90@ 5.20	*4.90@ 5.20*
Pool 11, Philadelphia	4.65@ 5.10	*4.65@ 5.00*
Pool 1, Hamp. Roads	4.60	*4.40*
Pool 2, Hamp. Roads	4.35	*4.20*
Pools 5-6-7 Hamp. Rds.	4.10@ 4.15	*4.10*

Current Quotations British Coal f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	March 22	March 29†
Admiralty, large	32s.@33s.	*31s.6d.@32s.6d.*
Steam smalls	23s.	22s.6d.@23s.6d.
Newcastle:		
Best steams	26s.@26s.3d.	**26s.@26s.6d.**
Best gas	25s.@25s.6d.	25s.@25s.6d.
Best bunkers	25s.	*24s.6d.*

†Advances over previous week shown in **heavy type** declines in *italics*.

Traffic News

Three Roads Balk at Conditions For Clinchfield Lease

The Carolina, Clinchfield & Ohio Ry. has added its protest to those of the Atlantic Coast Line and the Louisville & Nashville against the conditions raised by Commerce Commissioner Hall as a basis for the lease of the Clinchfield by these two lines. Attorneys for the three roads assert that if these conditions are enforced the consummation of the lease will be impossible.

"The case," says the brief filed by the Clinchfield, "is distinctly different from the case of the Central-Southern Pacific, from which these proposed conditions have been copied. . . . In the Clinchfield case the resulting investment and market value for the Clinchfield stock is one of the vital considerations involved in the making of the proposed lease. The stockholders of the Clinchfield have held their investment for many years with practically no returns and consequently, have had little, if any, available market for the same. The making of the lease will result in an assured dividend on the stock, with the usual effect upon the investment value of and market for the same."

Approves Lehigh Valley Control of D. S. & S.

The Lehigh Valley R.R. has been granted permission by the Interstate Commerce Commission to acquire control by lease and stock ownership of the Delaware, Susquehanna & Schuylkill R.R. The decision was of significance only in that it marked the carrying out of one of the provisions of the segregation decree. The Lehigh already owns the stock of the D. S. & S., a ten-mile line in the coal region of Pennsylvania penetrated by the parent road.

C. & O. to Build 3,000 Cars

Construction of 3,000 hopper cars in its own shops, it is reported, is being considered by the Chesapeake & Ohio R.R., and the company is said to be in the market for 30,000 tons of steel to be used in the work.

Railroads Order More Cars

Railroads of the United States on March 1 had 45,074 freight cars on order, of which 15,632 were coal cars, according to report by the Car Service Division of the American Railway Association. This was an increase of 19,684 cars compared with the number on order on Feb. 1. During February, 11,537 freight cars were placed in service, making a total of 27,729 installed during the first two months this year. Of the cars installed during February 4,841 were coal cars. The railroads also had on order on March 1 457 locomotives compared with 439 on Feb. 1. Locomotives installed in service during February totaled 214, making a total of 485 installed during January and February.

Virginia Ry. Income Climbs

Net income of the Virginian Ry. for 1923 was $3,671,444, as compared with $3,408,032 in 1922, according to a preliminary report made public yesterday. Operating revenues were $20,328,347, compared with $19,009,443 in the previous year. Expenses increased from $12,439,391 in 1922 to $13,611,420 in the year just closed. The total assets of the company are listed as $134,672,098, in comparison with $122,235,544 last year.

Association Activities

Coal producers in the Broad Top District have formed **the Broad Top Coal Operators' Association,** the main purpose of which is to conserve coal properties by approved methods of production and distribution. H. H. Lineaweaver, of the Economy Domestic Coal Co., of Philadelphia, and Schipper Brothers' Coal Mining Co., Six Mile Run, was elected president; W. W. E. Shannon, of the Shannon Co., Dudley, vice-president, and W. L. Scott, of J. M. McIntyre & Co., Six Mile Run, secretary-treasurer. The organization, which is composed of a score of the largest operators in the region, plans to co-operate and coordinate its efforts with those of other trade associations, and with governmental agencies in the furtherance of all projects affecting the industry. The formation of the body is looked upon as an effort to increase the domestic use of Broad Top

The annual election of officers of the Indiana Bituminous Coal Operators' Association of Indiana was held in the offices of the Terre Haute Chamber of Commerce recently. All officers who have served for the past year were re-elected, as were the members of the executive board as follows: President, E. D. Logsdon, of the Knox Consolidated Coal Co., Indianapolis; Vice-President, W. P. Zimmerman, of the Zimmerman Coal Co., Terre Haute; Secretary-Treasurer, P. H. Penna, Terre Haute. Members of the executive board are as follows: Hugh Shirkie, Shirkie Coal Co., Terre Haute; M. L. Gould, Linton Coal Co., Indianapolis; George H. Richards, Lower Vein Coal Co., Terre Haute; Homer D. Talley, Fort Harrison Mining Co., Terre Haute; Mr. Logsdon; Mr. Zimmerman; David Ingle, Ayrshire Coal Co., Evansville; A. M. Ogle, Vandalia Coal Co., Terre Haute; W. J. Freeman, Green Valley Coal Co., Terre Haute; Simon Zellers, Knox Consolidated Coal Co., Indianapolis; John A. Templeton, Templeton Coal Co., Terre Haute; J. C. Kolsem, Jackson Hill Coal Co., Terre Haute; James Moore, Crescent Coal Co., Evansville; H. M. Ferguson, Ferguson Coal Co., Clinton; John T. Connery, Miami Coal Co., Chicago, and James B. Pauley, J. K. Deering Coal Co., Chicago.

At the annual meeting of the **Norfolk Retail Coal Dealers' Association,** March 18, Oscar B. Ferebee, vice-president and treasurer of the Nottingham & Wreen Co., was elected president of the association to succeed W. L. Petty, president of George W. Taylor & Co. Other officers of the association are: B. T. Griffin, of Griffin Brothers, vice-president; G. C. White, of C. B. White & Brother, secretary and treasurer. Walter D. Rodgers, executive secretary of the National Retail Coal Merchants' Association, was the principal guest at the meeting. Arrangements were made for a large delegation of Norfolk coal men to attend the annual meeting of the National Coal Association at Bluefield, W. Va., June 4, 5 and 6.

Industrial Notes

The Rome Wire Co., which purchased all of the capital stock of the Atlantic Insulated Wire & Cable Co. in 1922 and which has since operated the plant, is to transfer the machinery of the patter plant from Stamford, Conn., to Rome, N. Y. Additions will be made to the plant at Rome and the entire business will be managed from that city.

Gellatly & Co., Oliver Building, Pittsburgh, Pa., have been appointed distributors for Post-Glover products, which include Homanite steel resistance grids and W. & W. starters, for the middle and western Pennsylvania districts. **Coffin & Smith,** Board of Trade Building, Scranton, have been appointed Post-Glover representatives in the anthracite district.

George E. Evans, one of the directors of the **Joy Machine Co.,** manufacturers of the Joy coal-loading machine, has announced the purchase by his company of the plant of the Colburn Machine Tool Co., at Franklin, Pa., for the purpose of manufacturing the Joy coal loader. The price paid for the Colburn plant was $300,000. The monthly output from the plant is expected to be 25 loaders per month. The Joy company has already taken possession of the plant, which had been idle for several years, and expect to begin production this month.

Brady-Warner Coal Corporation is equipping its Abrams Creek Mine at Oakmont, W. Va., with a rotary dump and rope and button retarding conveyor furnished by the Fairmont Mining Machinery Co., Fairmont, W. Va.

Coming Meetings

Canadian Retail Coal Association. Annual meeting, April 3 and 4, King Edward Hotel, Toronto, Ont., Can. Secretary, B. A. Caspell, Brantford, Can.

American Institute of Electrical Engineers. Spring convention, April 7-10, Birmingham, Ala. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

American Welding Society. Annual meeting, April 22-24, Engineering Societies Building, 33 West 39th St., New York City. Secretary, W. M. Kelly, 33 West 39th St., New York City.

National Exposition of Coal Mining Equipment and Machinery of the American Mining Congress, May 12-17, Cincinnati, in conjunction with the annual meeting of the National Coal Association.

National Coal Association. Annual meeting, May 14-16, Cincinnati, Ohio. Executive Secretary, H. L. Gandy, Southern Building, Washington, D. C.

Pennsylvania Retail Coal Merchants Association. Twentieth annual meeting and exposition, Commercial Museum, 34th and Spruce Sts., Philadelphia, Pa., May 22-23. Secretary, W. M. Bertolet, Reading, Pa.

International Railway Fuel Association. Sixteenth annual convention, May 26-29, Chicago, Ill. Secretary, J. G. Crawford, Chicago, Ill.

The American Society of Mechanical Engineers. Spring meeting May 26-29, Cleveland, Ohio. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

American Wholesale Coal Association. Annual convention, White Sulphur Springs, W. Va., June 3-4. Secretary, G. H. Merryweather, Chicago Temple Bldg., Chicago, Ill.

The National Foreign Trade Convention. June 4-6, Boston, Mass. Secretary, O. K. Davis, 1 Hanover Square, New York City.

National Retail Coal Merchants' Association. Annual meeting, Hotel Virginian, Bluefield, W. Va., June 4-6. Secretary, Walter D. Rogers, Transportation Building, Washington, D. C.

Illinois & Wisconsin Retail Coal Dealers Association. Annual meeting, June 10-12, Delavan, Wis. Secretary, I. L. Runyan, Great Northern Bldg., Chicago, Ill.

American Society for Testing Materials. Annual meeting, Chalfonte Hotel, Atlantic City, N. J., June 23-27. Secretary, Edgar Marburg, University of Pennsylvania, Philadelphia, Pa.

News Items From Field and Trade

ALABAMA

The Black Creek Coal & Coke Co., recently organized, has begun development on its 7,000 acres of Black Creek coal, the new mining camp being known as Thermal, located on the Louisville & Nashville R.R. in the northern end of Jefferson County. A slope already has been sunk for several hundred feet and work is progressing on a tipple and washery capable of handling 800 to 1,000 tons daily. Both inside and outside equipment will be of the most modern design, electrically driven. Houses for employees will be erected at once. A spur from the Louisville & Nashville R.R. to the mining site is about completed. It is stated that a byproduct coke plant is to be built later on. All of the officials of the company are experienced mining men, E. M. Tutwiler, Sr., being president; Priestly Toulmin and T. W. Morgan, vice presidents; Priestly Toulmin, Jr., secretary; E. C. Morgan, treasurer and general manager, and Herbert Tutwiler, assistant to the president and sales manager. Head offices are located in Birmingham.

The Alabama Power Co. is adding a third unit of 20,000 kw. to its Gorgas steam plant, which will bring the plant up to 70,000 kw., or 95,000 hp. Hundreds of mining operations and industries in this district obtain power from the Alabama Power Co. and this standby steam plant affords uninterrupted service during low water periods.

The Blount County Mining Co. has been incorporated at Oneonta by J. G. Rowell and E. H. Rowell with a paid-in capital of $10,000 to engage in the coal-mining business.

COLORADO

During the month of February **Colorado mines produced 884,881 tons of coal,** this being a decrease of 31,121 tons as compared with the production for the same month last year. The total number of men employed in and about the mines for the month was 13,338.

ILLINOIS

The Consolidated Coal Co., of St. Louis will likely shut down Mine No. 9 at Murphysboro in the near future according to reports although there is a considerable tonnage of good coal still unmined. Driving of entries has been stopped. Water from the Big Muddy River broke into this mine two years ago, costing the company a considerable sum of money. The company has land yet unworked near Murphysboro and will probably sink a new mine north or east of the town in the future.

George F. Getz, president of the **Globe Coal Co.,** Chicago, announces the election of **C. R. Campbell** as vice-president of the company, in charge of the bituminous coal department, effective, April 1, 1924. Mr. Campbell was with the John A. Logan Coal Co. and formerly was vice-president of the Consumers company.

The Prosperity Coal Co., 343 S. Dearborn St., Chicago, has been incorporated with a capital stock of $20,000, to produce coal and other minerals. Incorporators are J. W. McElvain, J. I. McTaggart and T. H. McElvain.

The Crerar-Clinch Coal Co., of Chicago, has closed the Dale mine at Herrin. The same company operates mines at Johnston City and Du Quoin and is opening a new strip mine which may become one of the largest in the Du Quoin field.

The mine at Valley View owned and operated by Sackville & Wynn has been closed, probably until next fall. The mine is the largest near that place.

INDIANA

The Hickory Grove strip miners, of Terre Haute, who have been on strike since Jan. 2, recently returned to work, the officials of the mining company having signed the Terre Haute agreement with the officials of the United Mine Workers. The Hickory Grove mine employs about 45 miners and has a capacity of about 250 tons per day. The mine is located about one and one-half miles east of Riley. Following the attempt of the miners to organize the company continued to operate with other men until about three weeks ago, when the mine was closed down.

M. S. Wells, N. G. Wallace and Joseph Mullikin have bought at receiver's sale the property and assets of the Sugar Valley Coal Co., of Terre Haute, for $98,801.22. The buyers filed with the receiver, Clem J. Richards, a written request that the property be conveyed to the Macksville Coal Co. The sale was made subject to liens on the coal company's property and assets, which, with receiver's compensation and expenses, total the purchase price.

The Comet Coal Co., Evansville, capitalized at $30,000, has filed articles of incorporation with the Secretary of State. The company will develop and mine coal and other minerals. The directors of the company are Fred J. Stock, Boonville, and Charles W. and Frederick B. Cook, both of Evansville.

KENTUCKY

Late reports on the actions of the adjourned Kentucky Legislature indicate that with the exception of passage of the bill making script transferable and negotiable at face value, and certain slight changes in the Workmen's Compensation law, there wasn't much legislation that will have any effect on the coal trade.

The Kentucky Utilities Co., of Louisville, one of the Insull interests, which is supplying most of the mine power in both the eastern and western Kentucky coal fields, **is planning a new hydro-electric operation** on the Cumberland River, near Burnside. The same interests are putting in a mammoth hydro development on the Dix River, in central Kentucky, which will supplement the present power facilities, and another large steam plant at Pineville.

The Chickasaw Coal Co., of Madisonville, capital $25,000, has been chartered by James D. Overall, Blayney C. Mitchell and J. Basil Ramsey. Overall is an experienced large operator.

The Pond Creek Pocahontas Coal Co. for 1923 reports net profits of $19,353, or 15c. a share on the capital stock. The company's net current assets are $909,953 and net current liabilities of $280,123, leaving working capital of $629,830.

MARYLAND

The new $200,000 plant of the **Anthracite Fuel Corporation,** at Fait Avenue and Eight Street, Highlandtown, is about completed. The plant, the first unit of which will consist of four buildings, will be used for the manufacture of coal briquets and will be the only establishment of its kind in Maryland. The completed structures consist of manufacturing, administration and storage buildings and a power house.

MASSACHUSETTS

The Island Creek Coal Co. reports net profits of $2,722,545 for 1923 after all charges, taxes and preferred dividends, equal to $20.39 a share earned on the common stock outstanding. In 1922 net profits were $3,440,350, equal to $26.44 a share on the common stock. The general balance sheet showed net current assets of $6,013,271 against net current liabilities of $1,528,687, leaving the company working capital of $4,484,584.

MINNESOTA

The Duluth, Missabe & Northern Ry. will add another coal-handling bridge to its Duluth dock, making four in all. The new bridge will serve as an auxiliary for one which is called upon for almost continuous service now. It will serve the west side of the dock. The bridge and equipment will be installed by the Mead-Morrison Co., Chicago, and the electrical equipment by the General Electric Co., of Schenectady. It will cost about $200,000. The dock has a storage capacity of 650,000 tons and the bridge will increase the handling capacity 25 per cent.

Charles Beuglet, Duluth sales manager for the Northwestern Fuel Co., has undergone an operation at Rochester, Minn.

MISSOURI

Harry Scullin, president of the **Scullin Steel Co.,** St. Louis, Mo., and associates are reported to have **an option on 41,000 acres of land in the Raccoon mountains,** containing approximately 20,000 tons of iron ore and 9,000 tons of metallurgical coal to the acre. Plans include building barges and tow boats to handle the raw material.

Roy Williams, of New Orleans, has succeeded John McDermott as manager at the Clay Coal & Mining Co.'s mine on the Williams farm, east of Excelsior Springs. Mr. McDermott's interests in the mine were bought one year ago by the other stockholders, but he remained with the company March 1, 1924.

NEW YORK

F. G. Wilcox was appointed president and general manager of the Price-Pancoast Coal Co., the Melville Coal Co. and the West End Coal Co., at a meeting of the boards of directors of those companies, March 24, at their offices, 17 Battery Place, New York City. Mr. Wilcox succeeds William L. Allen, who died recently.

The Elk Horn Coal Corporation for the year ended Dec. 31, 1923, reports net profits of $168,301 after taxes, depreciation, depletion and interest, equivalent to $1.27 a share earned on $6,600,000 preferred stock, par 50. This compared with a net loss in 1922 of $99,906. Directors decided that earnings do not warrant a dividend at this time.

Twining Tousley, formerly associated with Marshall Field, Glore, Ward & Co., has accepted a position with the **Coal and Iron National Bank** in its new business department. Mr. Tousley has had considerable experience along financial lines, having spent most of his business life in the employ of financial institutions.

Announcement is made that the last of the ten coal- and grain-carrying steamships building in Europe for the Eastern Steamship Co., a Buffalo syndicate, has just been launched at Birkenhead, England, and will be delivered in April. The vessel has been named the Eugene C. Roberts, after the manager of the coal firm of E. L. Hedstrom. The steamers are of about 3,000 tons capacity, and so are fitted to navigate the Welland Canal and the St. Lawrence River. They ought to effect a resumption of anthracite shipments from Lake Ontario to the upper lakes.

Charles Longenecker, formerly sales engineer with the Bonnot Company at Canton, Ohio, **has become associated with the Combustion Engineering Corporation,** 43 Broad Street, New York City. He will be identified with the recently created industrial department of the Combustion Engineering Corporation. This Department, in charge of H. D. Savage, will specialize in the application of pulverized fuel to industrial work of all kinds.

OHIO

Signs of the times have rarely been more acutely shown than in the past week, when several offices and branch offices bowed to the general condition of affairs in Cincinnati. **The International Fuel & Iron Co.,** which for the past three years maintained an office in the Union Trust Building, announced that it would be closed, and Charles Rese, who has been in charge would be identified with the main office in Pittsburgh. **The Kelly's Creek Collieries Co.** has closed the office maintained at Cincinnati for over a year and will conduct its Western business from the Charleston office. **The Swain Fuel Co.** will liquidate. **The Western Coal Co.** will close within the week. **The Co-Operative Fuel Co.,** a smokeless concern with head offices in Bluefield, W. Va., has closed its offices in the Fourth National Bank Building.

Papers have been filed with the Secretary of State chartering the **Branch Creek Coal Co.,** Cleveland, with an authorized capital of $50,000 to mine and deal in coal. Incorporators are Frank J. Kelly, E. E. Rodway, Paul F. Colebrook and A. F. Gaughan.

Al Knidler, in charge of sales for the Liggett Brothers Coal Co. for some time, has been appointed Western sales manager for the Three States Coal Co. with headquarters in Cincinnati.

Harry Neilson, who had charge of the Co-Operative Fuel Co.'s office in Cincinnati, is now in charge of the Western sales agency of the Universal Coal Co. in the same city.

N. K. Howard, who was identified with the office of the Old Dominion Coal Co. in the Union Central Building, until it went in the hands of the receiver, is now associated with the Mid West Coal Co.'s Cincinnati office.

M. L. Yuster, head of the Packard Coal Co., of Columbus, who was the individual owner of a small mine near Athens, with 200 acres of coal land, has **traded the mine to D. W. Wallace for a foundry and machine shop**, which has been known as the Athens Foundry & Machine Co. The mine was leased to the New Lexington Coal Co.

OKLAHOMA

The recently formed City Planning Commission of McAlester has set to work on an extensive program of development, which, first of all, contemplates more **thorough exploitation and development of the vast coal-mining operations about the city.** The coal deposits in Pittsburgh County are declared to have a potential wealth of $30,000,000,000 by engineers who have conducted careful surveys of the extent and depth of the coal veins. The Commission held its first meeting, which took form of a dinner at the Busby Hotel last week, when the commission had as guests ten members of the official party of the Missouri-Kansas-Texas Ry. touring the Katy lines as a public relations committee. The meeting followed an all-day visit of the railway officials to McAlester and the coal fields, during which they held a number of conferences with business interests looking to the creation of more cordial relations between the shippers and the railway company. The railway officials pledged the City Planning Commission every possible assistance in the development of the coal deposits of Pittsburgh County. The question of freight rates as they affect the marketing and transportation of coal from this section was gone into thoroughly, and plans for working out more equitable tariff schedules were made. Joint committees from the railway company and the coal-mining interests will frame recommendations for changes in freight rates which will be placed before the Interstate Commerce Commission in an effort to bring about more equitable freight rates for the McAlester district.

The McAlester-Craig Coal Mining Co. has been organized at McAlester, to do a general coal-mining business in development of some leases on coal lands in Pittsburgh County. The company is capitalized at $35,000, and the incorporators are H. C. Clark, L. Clark, and R. B. Cannon, all of McAlester. The company will operate steam shovels and drag lines in surface mining operations.

The Midway Coal Co. of Chelsea, is developing an extensive bed of coal found at shallow depth near Catale, six miles from Chelsea. The company is now operating two large steam shovels in surface mining operations, and is employing more than one hundred men. The steam shovels are running night and day. A prosperous town is being built at Catale, financed largely by the Midway Coal Co. Additional steam shovels are to be put to work at once, it is reported.

The Montezuma Creek Coal Co. has been incorporated in Okmulgee, with a capital stock of $50,000, by Harlan Read, H. D. Lloyd and others.

PENNSYLVANIA

Employees of the **Bethlehem Mines Corporation**, a subsidiary of the Bethlehem Steel Corporation, exceeded all expectations in subscribing to the 7 per cent cumulative preferred stock of the parent company, under the savings and partnership plan recently instituted by the Bethlehem Steel Corporation, which includes a bonus to stockholders in continuous service of the company. Out of a total of 6,932 men employed, 5,580 have taken advantage of the opportunity, by subscribing for 11,297 shares. Slickville Mines, under supervision of L. O. Mellinger, led the subscriptions with 98.5 per cent; Johnstown, under a supervision of Frank Horton and Duncan May, came a close second with a percentage of 98.1. Other divisions subscribed as follows: Wehrum, Pa., with 93.5 per cent; Heilwood, Pa., 92.6 per cent; Preston division, W. Va., 86 per cent; Ellsworth, Pa., 64 per cent; and Marion division, W. Va., 44 per cent.

TEXAS

The Marshall plant of the Darco Company, owned by the Atlas Powder Co., of Wilmington, Del., **will resume operations at once,** it is announced by A. N. Chase, superintendent and J. M. Williams, assistant superintendent and engineer. This is one of the largest plants of its kind in the United States and mines lignite from the extensive deposits owned by the company, the lignite being manufactured into charcoal for the manufacture of powder, and other chemicals taken from the lignite as by-products.

The Sandow Lignite Co., of Rockdale, has begun operating its extensive holdings six miles south of Rockdale. This company formerly was known as the Western Securities Co. and the mine it is now working as the Federal Fuel Co. The new company takes out the lignite by stripping process. One large steam shovel is now at work, removing the earth overlay and it is planned to place one and possibly two additional shovels in the mine at once. The vein of lignite is overlaid by about 30 ft. of earth. Shovels are now operating day and night, and load one carload of lignite on an average of every thirty minutes. A. P. Rudowsky is president of the company and M. R. Reddell is treasurer. John Weed is general superintendent and has charge of all operations at the mine.

UTAH

Castlegate Mine No. 1 of the Utah Fuel Co., which was closed down a few weeks ago and the men transferred to No. 2 mine, where the recent explosion occurred, will be opened right away. Mine No. 2, it is expected, will be in a position to resume operations, if necessary, about the first week in May.

The Blazon Coal Co. is offering $50,000 worth of common stock. The company is operating property in Wyoming, where it owns 480 acres of leased lands in the Kemmerer district. The company is headed by L. F. Rains, of Salt Lake City, president of the Carbon Fuel Co., and has a capital of $300,000.

It is expected that a railroad will be built in the near future to the coal beds in Salina Canyon, Sevier County, by either the Union Pacific or the Denver & Rio Grande R.R. The latter company has had concessions for some years, but has failed to act. It is said the Union Pacific is seeking concessions now.

It has finally been decided to conduct **a drive for a relief fund** for the dependants of the miners who lost their lives in the Castlegate explosion early in March. The drive is approved by the Governor and $100,000 will be asked.

WEST VIRGINIA

In all there were **nine new domestic coal corporations formed in West Virginia during February**, with a total capitalization of $905,000. These companies include the Carver Coal Co., of Charleston, capitalized at $50,000; Judicial Coal Co., of Clarksburg, capitalized at $25,000; W. M. Tyree Coal Co. of Huntington, capitalized at $100,000; Malone Collieries Co., of Grafton, capitalized at $5,000; Sitnek Coal Mining Co., of Fairmont, capitalized at $500,000; Trent-Pocahontas Coal Co., of Iaeger, capitalized at $50,000; Kenova-Lincoln Coal Corporation, capitalized at $100,000; Sutherland Coal Co., of Morgantown, capitalized at $50,000, and Howesville Coal Co., of Morgantown, capitalized at $25,000.

One of the largest deals consummated in some time was that under the terms of which the **Wilbur Fuel Co., acquired** the plants, properties and assets of the **Vulcan Coal Co. and the Eastern Utilities Coal Co.**, with large holdings in Grant District of Harrison County, for a consideration said to be in the neighborhood of $1,000,000. The purchase covers 1,198 acres in fee and 368 acres of surface land upon which there is a town of 115 houses. Officers of the newly organized concern are D. J. Carter, of Clarksburg, president; E. J. Lewis, vice-president and treasurer; R. D. Lloyd, general manager; Harry Sheets, secretary. On the board of directors are the above officers and Frank B. Sinclair, of Steubenville, Ohio; H. W. Sheets, R. D. Lloyd, E. J. Lewis, J. M. Carter and D. J. Carter, of Clarksburg.

The Mohawk Coal & Coke Co. has changed the location of its principal office from Welch to Bluefield, and the **Tierney Mining Company** has changed the location of its principal office from Powhatan to Bluefield.

The Nagolas Coal Co. has been awarded a verdict of $26,000 in the United States District Court for the southern district of West Virginia in its suit against the Pine Ridge Coal Co., of Detroit, Mich. This suit was the outgrowth of a dispute as to the division of profits arising from business deals in which both companies were interested.

T. J. Collins, chief mine inspector of the Collins interests in southern West Virginia for the last ten years, has severed his connection with them to become identified with the Harman interests in McDowell County as general superintendent of all mines, his appointment having become effective on April 1.

Three tracts of coal land in Ohio and Brooke counties have been conveyed to the Carnegie Coal Co., of Carnegie and Pittsburgh, Pa., by Mr. and Mrs. John A. Bell, of Carnegie, Pa., the consideration involved being approximately $85,000. A mortgage has been filed by the Carnegie company in favor of the Colonial Trust Co., of Pittsburgh, covering the purchase of the coal tracts and other property of subsidiary companies to the Carnegie Coal Co., showing that $7 500,000 has been secured in first mortgage on the properties.

Philip Konrad, of Killarney, has been appointed general superintendent of the mines of the Killarney Smokeless Coal Co., of the Ingram Branch Coal Co. and of the Smith Pocahontas Coal Co. **Green H. Nowlan,** of Lynchburg, was recently elected president of these companies.

The Simpson Creek Collieries Co., of 1230 Hanna Building, Cleveland, Ohio, of which W. M. Osborne is secretary, has been granted a certificate of authority to transact business in West Virginia.

The Illinois Coal Co. has increased its capital stock from $300,000 to $400,000 and the **Elm Grove Mining Co.** from $2,400,000 to $3,000,000.

The name of the Blake-Towson Coal Corporation has been changed to the **Blake Coal Co.**

CANADA

The Blue Diamond Coal Mines, of Brule, Alta., which are owned jointly by the McIntyre-Porcupine and Timiskaming mining companies, of Northern Ontario, have been closed down owing to lack of orders from the Canadian National Rys. Gordon F. Dickson, the manager, is visiting in the East.

Figures presented to the Canadian House of Commons showed that **Canada imported 20,989,953 tons of coal during 1923,** of which 20,417,239 came from the United States. Of the latter, 15,511,206 tons was bituminous, 4,905,707 tons anthracite and 2,331 tons lignite. The balance came from Britain with the exception of a few tons from the Philippines and Alaska.

The Consolidated Mining & Smelting Co., the principal user of Crows Nest coke, is said to be making arrangements for the **importation of coke from Europe.** The company has made arrangements for the shipping of large quantities of concentrate, matte, and base bullion to Europe, and it is said that the boats carrying this material will return laden with coke. The high cost of coke at the Trail smelter has retarded operations for some years, and the company long has considered other sources of supply.

The Princeton Coal & Land Co. has obtained a verdict for a refund of taxation that had been imposed wrongfully during the years 1909 to 1921, inclusive. Though the amount at stake was comparatively small—$4,102.40—the decision is important in that it is the first case that has been tried under the amendment to the taxation act, which was passed in December, 1922, whereby the Court of Revision may decide upon the petition of any taxpayer who declares himself, by reason of any manifest error in the assessment roll for any preceding year, to have been charged more than 25 per cent over the sum that he ought to have been charged.

Of $25,000 sent to the mining communities during the recent strike by the administrators of the Charles Garland Fund, (the Harvard Communist who turned his fortune over to the Communists) **the bulk was spent in the dissemination of Red propaganda,** it is reported. The money was to have been expended in alleviation of suffering and privation among the strikers.

The Ontario Government has instructed counsel to apply to the Dominion Board of Railway Commissioners for an **investigation into the whole question of coal rates from Alberta and Nova Scotia,** it was announced in the Ontario Legislature.

New Equipment

Electrically Operated Drill And Hammer

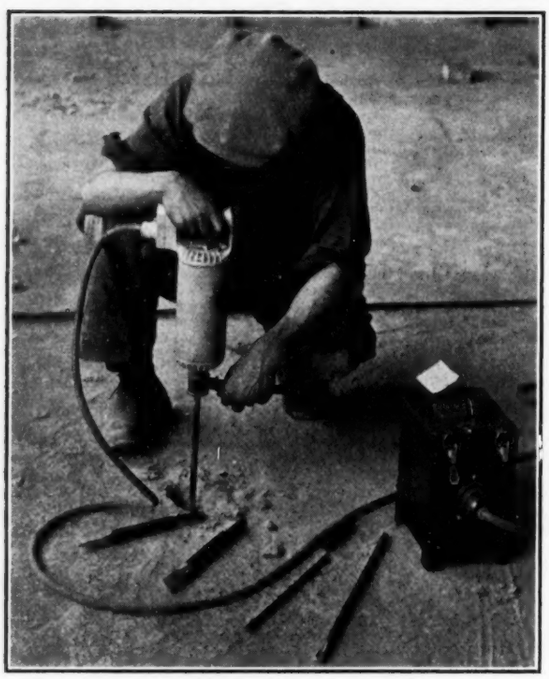
A portable tool known as the Syntron electric hammer has been designed to run on 60-cycle current and strike 3,600 blows per minute. It is suitable for drilling through masonry walls, drilling holes for expansion bolts, chipping castings, light riveting and assembly work, chipping and cracking stone, calking pipe, tank plates and so forth. A similar tool designed for 25 cycles which will strike 1,500 blows per minute can be used for heavier riveting. The hammer proper consists of two windings which are energized alternately to impart a reciprocating movement to a movable core or piston, which is the only moving part. In its forward stroke, the piston strikes a tool, which may be a drill, chisel, rivet set or the like. In its backward stroke the piston strikes an elastic bumper in which it stores its kinetic energy until it is moved forward again. The energy stored in the bumper is then returned to the piston on the forward stroke.

To operate the hammer, alternating current is supplied to the two windings to energize them alternately so as to impart a reciprocating movement to the piston, which moves in synchronism with the frequency of the alternating current supplied to the windings. The current alone produces the operating forces to move the piston. No mechanical devices are used.

The hammer is rugged in construction and aside from an occasional oiling of the piston, needs no attention. The piston is made of special hardened steel and will last indefinitely. A trigger switch on the handle of the hammer starts and stops its operation.

The hammer meets the need of a portable device that can be carried from job to job. It can be connected to any lamp socket and is then ready for work.

The hammer is at present available in three sizes, one weighing 10 lb., another weighing 17 lb., and a third weighing 24 lb. All sizes are available for 110 or 220 volts alternating current of any frequency. The power consumption of the 17-lb. hammer is 300 watts. Two carrying kits are supplied to hold the hammer and a control box, together with a 50-foot extension cord and a complete assortment of drills, chisels and stone points.



Electric Hammer Operates on Alternating Current

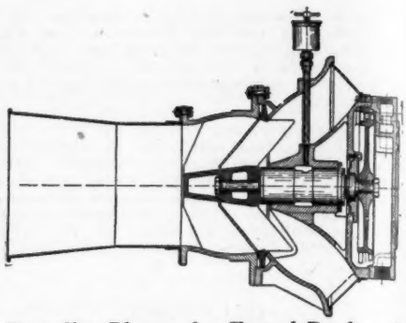
Wherever electric current is available this little hammer can be used, direct current must be changed to alternating current because the number of blows per minute depends on the frequency. It fills a great need for a hammer where only electric current can be used as a source of power.

High-Pressure Air Blower

The field of usefulness for propeller blowers has been greatly increased by the introduction of the Coppus Vano blower, manufactured by the Coppus Engineering Corp., Worcester, Mass. With the exception of low-duty ventilating fans, propeller blowers have been used almost exclusively for undergrate draft on hand-fired boilers, or with chain-grate and overfeed stokers. The Coppus blower has a screw-blade propeller which delivers the air parallel to the axis of rotation. With this design the air leaves in the same direction as it enters.

It is claimed that this blower will produce pressures up to 8-in. water gage, and, therefore, can be employed where, until now, only centrifugal blowers could be used. The efficiency of the blower is about 80 per cent, and the power consumption at constant speed is practically unaffected by variations in the volume of the air delivered or the pressure.

The principal feature of the blower is the stationary guide vane which causes the air current leaving the propeller to be radially subdivided by the individual guide-vane blades and thus be taken up by them without shock. These blades have a curvature increasing in the direction of the rotation of the propeller which concentrates the air current and gives it further acceleration inside of stationary guide vanes so that a considerable part of the pressure is produced in the latter. Most of the end thrust is thus taken up by the stationary guide-vane casing. The air currents into which the flow of air has been subdivided by the guide-vane casing, leave it slightly rotating and with a motion convergent toward the axis so that the smallest section of the air flow is reached beyond the casing.



Propeller Blower for Forced Draft and Auxiliary Ventilation

This little blower is specially designed to develop high pressure. It fills a great need for auxiliary mine ventilation and stoker draft systems.

This blower finds wide application wherever a blower is desired. For forced-draft installations on automatic stokers, several units can be grouped together discharging into an air duct to the wind box of the different stokers or stoker compartments.

Auxiliary mine ventilation can be easily obtained from the single-unit machine having fan and driver on one shaft. However, to deliver air through long pipe lines, high initial pressure is necessary. As it is impossible in mine practice to keep air ducts tight, especially at the joints, the air lost by leakage, which increases with the high pressure, is often of greater volume than the actual air delivered at the discharge end of the pipe. Under these conditions, several Coppus blowers delivering the same quantity of air at 4-in. pressure may be installed in a series of units set at equal distances along the air duct. The losses through leakage are thus reduced to a fraction of what they would be at higher pressures.

Grounding Clamp for Conduit Systems

A solderless aluminum grounding device has been developed by the Neco Manufacturing Co., South Norwalk, Conn. The device has a projecting clamp to which the ground wire may be fastened. It can be readily threaded to a piece of conduit so as to provide an effective ground connection. The manufacturers are now in position to supply the clamps in sizes ranging from ½ in. to 6 in.

Unit Type Air Heater

A new heater has been placed on the market by the American Blower Company, of Detroit, Mich., for use in ventilation systems. The unit heater has an automobile-type radiator through which the air is circulated by means of a motor-operated fan. This device is especially suitable for ventilating systems of offices or warehouses.